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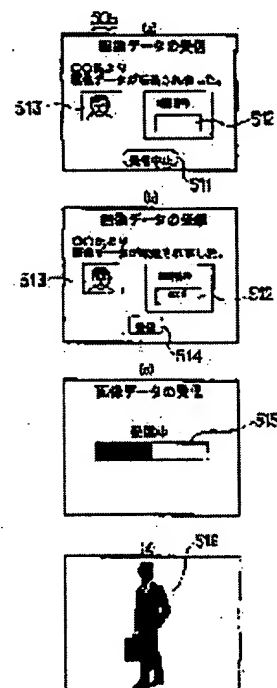
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## (54) DIGITAL CAMERA AND IMAGE TRANSMISSION SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent an image sent from the digital camera from being browsed by an unspecified party at a receiver side and to prevent undesired image data from being received by the receiver side.

SOLUTION: A sender sends image data to which authentication data to authenticate the sender are added, and a recipient confirms authentication data 513 displayed on a monitor 505 of a receiver before receiving the image data and instructs acceptance/rejection of reception of image data from the digital camera by using a reception button 514 or a reception stop button 511. Thus, the receiver side prevents reception of undesired image data.



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CLAIMS

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[Claim(s)]

[Claim 1] The digital camera which photos an image and carries out [ having had an authentication information addition means is the digital camera used for the picture transmission system which consists of a digital camera which has the function transmit the photoed image data through the server for a transfer etc. directly, and an image data sink which receives and displays the image data transmitted from this digital camera, and add the information equivalent to a personal identification number or it to the image data which transmits at the time of the image-data transmission from a digital camera, and ] as the description.

[Claim 2] The digital camera which photos an image and has the function to transmit the photoed image data through the server for a transfer etc. directly, In the picture transmission system equipped with the image data sink which receives and displays the image data transmitted from the digital camera the above-mentioned digital camera It has an authentication information addition means to add the information equivalent to a personal identification number or it to the image data which transmits at the time of the image data transmission from a digital camera. The above-mentioned image data sink When it is going to receive the image data transmitted from the above-mentioned digital camera The picture transmission system characterized by making it become receivable [ image data ] when the authentication information which was equipped with an authentication information input means to input authentication information, and was inputted by this authentication information input means, and the authentication information transmitted from the above-mentioned digital camera are in agreement.

[Claim 3] The digital camera which photos an image and has the function to transmit the photoed image data through the server for a transfer etc. directly, In the picture transmission system equipped with the image data sink which receives and displays the image data transmitted from the digital camera the above-mentioned digital camera It has an authentication data addition means to add the authentication data for checking a transmitting person in advance of reception of the image data in an image data receiving side at the time of image data transmission. The above-mentioned image data sink A display means to display the authentication data added by the above-mentioned authentication data addition means, The picture transmission system characterized by having a directions means to direct reception authorization of the image data from the above-mentioned digital camera, and performing reception and image display of the image data from the above-mentioned digital camera according to directions by the above-mentioned directions means.

[Claim 4] The authentication data which the above-mentioned authentication data addition means adds are a picture transmission system according to claim 3 characterized by being the image data of a transmitting person's face.

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DETAILED DESCRIPTION

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## [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention photos an image and relates to the digital camera which has the function to transmit the photoed image data through the server for a transfer etc. directly, and its picture transmission system.

[0002]

[Description of the Prior Art] The picture transmission system which transmits conventionally the image data photoed with the digital camera to the receiving set of a remote place using the telephone line etc. is known. In this kind of system, the image data transmitted from the digital camera at the time of reception of image data is received directly, and there are what was displayed, and a thing which displayed the full-scale image data corresponding to the selected cutback image when the cutback image with which reception and cutback image display of cutback image data were first performed, and the addressee was displayed was chosen.

[0003]

[Problem(s) to be Solved by the Invention] However, in the above conventional digital camera and its picture transmission system, since there is no transmission approach of specifying an addressee by the transmitting side so that only specific human being can peruse a transmitting image, human being unspecified by the receiving side will peruse the image transmitted from the digital camera. On the contrary, in a receiving side, since body identification of a transmitting agency was not able to be performed until it receives the image data, there was a possibility of having received the image which is completely unrelated, or receiving and displaying image data which slanders people.

[0004] Are made in order that this invention may solve the trouble mentioned above, and only a specific person enables it to peruse the image transmitted from the digital camera by the receiving side. Prevent the transmitted image being perused by the man unspecified by the receiving side, and an addressee enables it to identify the body of a transmitting person before reception of image data. It aims at offering the digital camera which can prevent reception of unnecessary image data, and its picture transmission system.

[0005]

[Means for Solving the Problem] In order to attain the above-mentioned object invention of claim 1 The digital camera which photos an image and has the function to transmit the photoed image data through the server for a transfer etc. directly, It is the digital camera used for the picture transmission system which consists of image data sinks which receive and display the image data transmitted from this digital camera. It has an authentication information addition means to add the information equivalent to a personal identification number or it to the image data which transmits at the time of the image data transmission from a digital camera.

[0006] Since the information equivalent to a personal identification number or it can be added to the image data which transmits at the time of the image data transmission from a digital camera with an authentication information addition means in the above-mentioned configuration, only those who know the information equivalent to the personal identification number or it which was added to the image data transmitted by the receiving side can receive and peruse image data.

[0007] Moreover, the digital camera which has the function for invention of claim 2 to photo an image and to transmit the photoed image data through the server for a transfer etc. directly, In the picture transmission system equipped with the image data sink which receives and displays the image data transmitted from the digital camera a digital camera It has an authentication information addition means to add the information equivalent to a personal identification number or it to the image data which transmits at the time of the image data transmission from a digital camera. An image data sink When it is going to receive the image data transmitted from the digital camera It has an authentication information input means to input authentication information, and when the authentication information

inputted by this authentication information input means and the authentication information transmitted from the digital camera are in agreement, it is made to become receivable [ image data ]. In this configuration, since it becomes receivable [ image data ] when the authentication information inputted by the authentication information input means and the authentication information transmitted from the digital camera are in agreement, only a specific person can peruse the transmitted image by the receiving side.

[0008] Moreover, the digital camera which has the function for invention of claim 3 to photo an image and to transmit the photoed image data through the server for a transfer etc. directly, In the picture transmission system equipped with the image data sink which receives and displays the image data transmitted from the digital camera a digital camera It has an authentication data addition means to add the authentication data for checking a transmitting person in advance of reception of the image data in an image data receiving side at the time of the image data transmission from a digital camera. A display means to display the authentication data to which the image data sink was added by the authentication data addition means, It has a directions means to direct reception authorization of the image data from a digital camera, and is made to perform reception and image display of the image data from a digital camera according to directions by the directions means. In this configuration, a transmitting person adds the authentication data for checking a transmitting person at the time of image data transmission, and after checking the authentication data displayed on the display means before image data reception, an addressee will direct reception authorization of the image data from a digital camera with a directions means, and will receive image data.

[0009] Moreover, the authentication data which an authentication data addition means adds can be made into the image data of a transmitting person's face. Thereby, in an addressee side, a transmitting person can be easily checked as the authentication data displayed on the display means are also.

[0010]

[Embodiment of the Invention] Hereafter, the digital camera equipped with the image recording system by 1 operation gestalt of this invention is explained with reference to a drawing. Drawing 1 thru/or drawing 3 show the transverse plane of the digital camera equipped with the image recording system by this operation gestalt, a tooth back, and a base. Drawing 4 shows the electric configuration of this digital camera. The digital camera 1 consists of the body section 2 of a camera of a core box, and the rectangular parallelepiped-like image pick-up section 3. The image pick-up section 3 is seen from a transverse plane, and the right lateral of the body section 2 of a camera is equipped with it rotatable in removable, and this right lateral and an parallel field.

[0011] The image pick-up section 3 has image pick-up equipment which consists of optoelectric transducers, such as the taking lens 301 which consists of a macro zoom, and CCD (Charge Coupled Device), and the optical image of a photographic subject is changed into the image (image which consists of each pixel of CCD with the charge signal by which photo electric translation was carried out) which consists of an electrical signal, and it incorporates it. On the other hand, the body section 2 of a camera has the connection terminal 13 with which external connection of the display 10, the applied part 17 of a memory card 8, and personal computer which consist of LCD (Liquid Crystal Display) is made, and after it performs predetermined signal processing to the picture signal incorporated mainly in the above-mentioned image pick-up section 3, it processes the display to the LCD display 10, record to a memory card 8, the transfer to a personal computer, etc.

[0012] The macro zoom lens 301 is arranged in the interior of the image pick-up section 3, and the image pick-up circuit which equipped the proper place of the back location of this macro zoom lens 301 with the CCD color area sensor 303 is established in it. Moreover, the modulated light circuit 304 equipped with the modulated light sensor 305 which receives the reflected light from the photographic subject of flash plate light is established in the proper place in the image pick-up section 3.

[0013] As shown in drawing 1, the infrared transceiver section IR for the grip section 4 being prepared for the proper place of the left end section, and giving the up proper place of a right edge the data transfer of the built-in flash plate 5 and external instruments, such as a personal computer, is formed in the front face of the body section 2 of a camera. Moreover, the switches 6 and 7 for coma delivery at the

time of reproducing a record image are formed in the center of abbreviation on the top face of the body section 2 of a camera. A switch 6 is a switch (henceforth UP switch) for carrying out coma delivery of the record image in the direction (the direction of the order of photography) in which a coma number increases, and a switch 7 is a switch (henceforth a DOWN switch) for carrying out coma delivery of the record image in the direction in which a coma number decreases. Moreover, in view of the tooth-back side, the elimination switch D for eliminating the image recorded on the memory card 8 is formed in the left-hand side of the DOWN switch 7, and the shutter carbon button 9 is formed in the right-hand side of the UP switch 6.

[0014] In the tooth back of the body section 2 of a camera, as shown in drawing 2, the LCD display 10 for performing the monitor display (equivalent to a view finder) of a photography image, the repeat display of a record image, etc. is formed in the center of abbreviation of the left end section. Moreover, the return switch ESC for giving the cancellation directions of the content which change the content of a display of floor line mode setting key 11 about flash plate luminescence, electric power switch PS, and the LCD display 10 and which it display-changeover-switch-DISP(ed) and were inputted is formed in the upper part location of the LCD display 10. The compressibility configuration switch 12 for carrying out switch setting out of the compressibility K of the image data recorded on a memory card 8 is formed in the lower part location of the LCD display 10 further again.

[0015] The "automatic luminescence mode" in which the built-in flash plate 5 is made to emit light automatically in a digital camera 1 according to photographic subject brightness as the mode about flash plate luminescence, "The compulsive luminescence mode" in which the built-in flash plate 5 is made to emit light compulsorily regardless of photographic subject brightness, And whenever the "luminescence prohibition mode" in which luminescence of the built-in flash plate 5 is forbidden is formed and it presses the above-mentioned floor line mode setting key 11, each mode of "automatic luminescence", "compulsive luminescence", and "prohibition on luminescence" switches cyclically, and selection setting out of one of the modes is carried out. Moreover, a digital camera 1 will be set as compressibility  $K=1/8$ , if selection setting out is possible for two kinds of compressibility, one eighth and  $1/20$ , K, for example, it slides the compressibility configuration switch 12 to the right, and if it slides to the left, it will be set as compressibility  $K=1/20$ . Moreover, with this operation gestalt, although it could be made to carry out selection setting out of two kinds of compressibility K, it is made to carry out selection setting out of three or more kinds of compressibility K.

[0016] Furthermore, the mode setting switch 14 for carrying out switch setting out of "photography mode", a "playback mode", "transfer mode", and the "utility mode" is formed in the right end upper part of the tooth back of the body section 2 of a camera. The mode in which photography mode takes a photograph, the mode which carries out the repeat display of the photography image with which the playback mode was recorded on the memory card 8, and the image recorded on other external image recording equipments to the LCD display 10, the mode in which transfer mode transmits image data to the server for a transfer, and a utility mode are the modes which can use various utilities. If the mode setting switch 14 also consists of a slide switch of two contacts, for example, it slides to the right, photography mode will be set up, if it slides in the center, a playback mode will be set up, and a utility mode will be set up, if it slides to the left and will slide to transfer mode and further the left.

[0017] The cell material well 18 and the card material well 17 of a memory card 8 are formed in the base of the body section 2 of a camera, and loading opening of both the material wells 17 and 18 is blockaded with the clamshell type lid 15. the digital camera 1 in this operation gestalt -- four AA -- the power-source cell which comes to carry out the series connection of the form dry cell is made into the driving source.

[0018] In drawing 4, CCD303 carries out photo electric translation of the light figure of the photographic subject by which image formation was carried out with the macro zoom lens 301 to the picture signal (signal which consists of a signal train of the pixel signal received by each pixel) of the color component of R (red), G (green), and B (blue), and outputs it to it. A timing generator 314 generates various kinds of timing pulses for controlling actuation of CCD303. Since drawing is fixed drawing, exposure control in the image pick-up section 3 is performed by adjusting the charge storage

time of CCD303 equivalent to the light exposure, i.e., the shutter speed, of CCD303. Since photographic subject brightness is low brightness, when it cannot be set as a suitable shutter speed, the unsuitable forward exposure depended insufficient [ exposure ] is amended by performing level adjustment of the picture signal outputted from CCD303. That is, exposure control is performed combining shutter speed and a gain adjustment at the time of low brightness. Level adjustment of a picture signal is performed in the gain adjustment in the AGC circuit in a digital disposal circuit 313.

[0019] The above-mentioned timing generator 314 generates the actuation control signal of CCD303 based on the reference clock transmitted from the timing-control circuit 202. A timing generator 314 generates clock signals, such as read-out control signals (a Horizontal Synchronizing signal, a Vertical Synchronizing signal, transfer signal, etc.) of the timing signal of for example, integral initiation / termination (exposure initiation / termination), and the light-receiving signal of each pixel, and outputs them to CCD303. Moreover, a digital disposal circuit 313 performs predetermined analog signal processing to the picture signal (analog signal) outputted from CCD303. A digital disposal circuit 313 has a CDS (correlation duplex sampling) circuit and an AGC (automatic gain control) circuit, reduces the noise of a picture signal by the CDS circuit, and performs level adjustment of a picture signal by carrying out the gain adjustment in an AGC circuit.

[0020] The modulated light circuit 304 controls the amount of luminescence of the built-in flash plate 5 in flash plate photography in the predetermined amount of luminescence set up by the whole control section 211. In flash plate photography, if the reflected light of the flash plate light from a photographic subject is received by exposure initiation and coincidence by the modulated light sensor 305 and this light income reaches the predetermined amount of luminescence, the luminescence stop signal to the flash plate control circuit 214 (henceforth floor line control circuit) prepared in the body section 2 of a camera from the modulated light circuit 304 will be outputted. The floor line control circuit 214 answers this luminescence stop signal, luminescence of the built-in flash plate 5 is stopped compulsorily, and, thereby, the amount of luminescence of the built-in flash plate 5 is controlled by the predetermined amount of luminescence.

[0021] In the body section 2 of a camera, the timing-control circuit 202 which generates the clock to a reference clock, a timing generator 314, and A/D converter 205 is formed. This timing-control circuit 202 is controlled by the whole control section 211. Moreover, A/D converter 205 changes each pixel signal of a picture signal into a 10-bit digital signal. A/D converter 205 changes each pixel signal (analog signal) into a 10-bit digital signal based on the clock for A/D conversion inputted from a non-illustrated A/D clock generation circuit.

[0022] The black level amendment circuit 206 amends the black level of the pixel signal (henceforth pixel data) by which A/D conversion was carried out to the black level of criteria. Moreover, the WB circuit 207 performs the level conversion of the pixel data of each color component of R, G, and B so that a white balance may also be doubled and adjusted after gamma amendment (signal transformation for carrying out reverse amendment of the reverse linearity of a recording characteristic, and bringing record concentration close to linearity more). The WB circuit 207 changes the level of the pixel data of each color component of R, G, and B using the level-conversion table inputted from the whole control section 211. In addition, the transform coefficient (inclination of a property) of each color component of a level-conversion table is set up by the whole control section 211 for every photography image. A gamma correction circuit 208 amends the gamma characteristics of pixel data. A gamma correction circuit 208 has six kinds of gamma amendment tables on which gamma characteristics differ, and performs gamma amendment of pixel data on predetermined gamma amendment table according to a photography scene or photography conditions.

[0023] An image memory 209 is memory which memorizes the pixel data outputted from a gamma correction circuit 208. The image memory 209 has the storage capacity for one frame. That is, when CCD303 has the pixel of a n line m train, an image memory 209 has the pixel data storage capacity for a nxm pixel, and is memorized in the pixel location where each pixel data corresponds. VRAM (Video Random Access Memory) 210 is the buffer memory of the image data by which a repeat display is carried out to the LCD display 10. VRAM 210 has the image data storage capacity corresponding to the

number of pixels of the LCD display 10.

[0024] In a photography standby condition, after predetermined signal processing is performed to each pixel data of the image picturized by every 1/30 (second) by the image pick-up section 3 by A/D converter 205, the black level amendment circuit 206, the WB circuit 207, and the gamma correction circuit 208, while memorizing in an image memory 209, it is transmitted to VRAM210 through the whole control section 211, and is displayed on the LCD display 10. Thereby, a photography person can check a photographic subject image with the image displayed on the LCD display 10. Moreover, in a playback mode, after signal processing predetermined by the whole control section 211 is performed to the image by which reading appearance was carried out from the memory card 8, it is transmitted to VRAM210 and a repeat display is carried out to the LCD display 10.

[0025] Card I/F212 is an interface for performing writing of the image data to a memory card 8, and read-out of image data. Moreover, I/F213 for a communication link is an infrared interface (IrDA), in order to make possible external connection of the communication link of a personal computer 19. It is the based interface. This personal computer 19 is used as a server for a transfer, in case the image data from a digital camera 1 is transmitted to a receiving set.

[0026] A modem 401 becomes irregular so that data transfer can do the image data which added the addition data for a transfer through the telephone line. Although the image data of a digital camera 1 is transmitted to a receiving set through the server 19 for a transfer with this operation gestalt, it is also possible to transmit direct image data to a receiving set from a digital camera 1 using a modem 401.

[0027] The floor line control circuit 214 is a circuit which controls luminescence of the built-in flash plate 5. The floor line control circuit 214 controls existence, the amount of luminescence, luminescence timing, etc. of luminescence of the built-in flash plate 5 based on the control signal of the whole control section 211, and controls the amount of luminescence of the built-in flash plate 5 based on the luminescence stop signal inputted from the modulated light circuit 304. Moreover, RTC219 is a clock circuit for managing photography time, and is driven by another non-illustrated cell. Moreover, a control unit 250 is a switch equivalent to the UP switch 6 mentioned above, the DOWN switch 7, the shutter carbon button 9, floor line mode setting key 11, the compressibility configuration switch 12, the mode setting switch 14, the return switch ESC, and display changeover switch DISP.

[0028] The whole control section 211 consists of a microcomputer, controls organically actuation of each part material in the image pick-up section 3 mentioned above and the body section 2 of a camera, and carries out generalization control of the photography actuation of a digital camera 1.

[0029] In photography mode, if photography is directed with the shutter carbon button 9, as shown in drawing 5 R> 5, the whole above-mentioned control section 211 The thumbnail image of the image captured after photography directions in the image memory 209 (low resolution picture for cutback image display), The compression image compressed with the JPEG (Joint Photographic Experts Group) method by the compressibility K set up by the compressibility configuration switch 12 is generated. Both images are memorized to a memory card 8 with the tag information (information, such as a coma number, exposure value, shutter speed, compressibility K, a photography day, data of turning on and off of the flash plate at the time of photography, scene information, and a judgment result of an image) about a photography image. In a memory card 8, the image of 40 coma can be memorized with compressibility 1/20, and the image data (640x480 pixels) of the high resolution compressed in tag information and a JPEG format and the image data for a thumbnail display (80x60 pixels) are recorded on each coma. It is possible to treat in each coma unit as an image file of for example, an EXIF format (a kind of the file format based on JPEG). The data of turning on and off of the flash plate at the time of a photography day and photography etc. are stored in the tag. Moreover, a photography person name, a personal identification number, and the data for authentication are also recorded in this tag.

[0030] Next, the image data transfer procedure after the digital camera photography which is the description of this invention, the personal identification number at the time of image data transfer, and the setting-out approach of authentication data are explained. This digital camera 1 has given the same operability as GUI (Graphical User Interface) of a personal computer. When there is an event [ in setting out of a utility etc. ] to be chosen according to a user, a message box (dialog) is displayed on the LCD



display 10. The depression of the shutter carbon button 9 is defined as actuation which means affirmation, and the depression of the UP switch 6 and the DOWN switch 7 is defined as actuation of sequential selection of a selection branch. Moreover, the depression of the return switch ESC is defined as the shift (return) to the upper layer from current setting-out mode, the drawback of actuation, and actuation of cancellation.

[0031] With this operation gestalt, the image data in the memory card 8 of a digital camera 1 is transmitted to a receiving set 500 through the server 19 for a transfer. When transmitting image data, the mode of a digital camera 1 is changed to image data transfer mode with the mode setting switch 14. If it goes into image data transfer mode, a display like drawing 6 (a) will be displayed on the LCD display 10, and the head image in a memory card 8 will be displayed on the image selection window 101. Here, a selection setting-out item (display which shows whether the item of throats, such as a cross hair and inverse video, is chosen) moves by pushing the UP switch 6 and the DOWN switch 7 between the items of the image selection window 101 and the "degree" carbon button 102. If the shutter carbon button 9 is pushed here at the time of image selection window 101 selection (when the selection setting-out item is located on the image selection window 101), the image selection window 101 will be chosen. Next, if the UP switch 6 and the DOWN switch 7 are operated according to directions of the dialog 103 which directs image selection, as for the front stirrup in a memory card 8, the image in the image window 101 will be updated by the following image. If the shutter carbon button 9 is pushed in the condition that the image to transmit in the image window 101 is displayed, the image currently displayed at the event will be determined as an image for a transfer, and a selection setting-out item will move to the "degree" carbon button 102. If the shutter carbon button 9 is pushed here, the "degree" carbon button 102 will be operated and a screen for a personal identification number input like drawing 6 (b) will be displayed.

[0032] Next, a personal identification number is inputted by the following approaches in the input frame 104 of the alphabet of five characters shown in drawing 6 (b). the UP switch 6 is pushed -- \*\* -- alike -- a candidate Roman alphabet -- a->b->c-> -- since it changes with ...., an alphabetic character is determined by pushing the shutter carbon button 9 in the place where the alphabetic character of hope appeared. Since the cursor location in the input frame 104 will shift to the single-character part right if an alphabetic character is determined, the following alphabetic character is inputted. Thus, an input of all alphabetic characters displays the "degree" carbon button 102 like drawing 6 (c). Here, since a screen like drawing 6 (d) will be displayed, the dialog 105 which directs photography of the data for authentication on a screen will be displayed, if the shutter carbon button 9 is pushed and a transmitting person is specified according to this, a transmitting person's own face is photoed. Although this digital camera 1 usually memorizes an image on a memory card 8 at the time of photography, since the image photoed as image data for authentication is temporary data at the time of a transfer, it is held in the buffer for images. Moreover, the image resolution which is extent which a transmitting person can specify is sufficient as this image data for authentication, rather than the usual photography data, it is a low resolution and a compression ratio is also set up highly. If a transmitting person's face is photoed, setting out of authentication data will be completed, photography image data will be held in the image memory 209 in a camera, and the screen on the LCD display 10 will turn into a screen like drawing 6 (e).

[0033] Next, if the shutter carbon button 9 is pushed, the "degree" carbon button 102 will be operated, it will become a screen like drawing 6 (f), and the image 106 for authentication will be displayed on a screen. Since all data required for image data transfer at this were assembled, the data transmission of it is attained. If the shutter carbon button 9 is pushed here, the transmitting carbon button 107 will be operated, data transfer will be started, and the progress will be displayed like drawing 6 (g). And after ending all data transmission, it becomes a screen display like drawing 6 (h). Image data is transmitted to the server 19 for a transfer through such actuation.

[0034] Next, the configuration and actuation by the side of a receiving set are explained with reference to drawing 7 and drawing 8. A receiving set 500 consists of the modem 502 which connects with the telephone line 501 and performs the strange recovery of a transmitted and received data, CPU503 which performs control of the whole equipment, ROM504 which stores the data receiving software of

dedication, a display (monitor) 505, an image memory 506 where the received image is saved, and a control unit 507 which consists of a mouse and a keyboard. This receiving set 500 can receive the image data of the digital camera 1 stored in the server 19 for a transfer through the telephone line 501.

[0035] Starting of the data receiving software stored in ROM504 performs dialup actuation to the server 19 for a transfer through a modem 502 periodically according to directions of a user from a receiving set 500. If new image data is transmitted to the server 19 for a transfer here, a part for the header unit of an image file (a photography person name, a personal identification number, and the data for authentication are included) will be sent to a receiving set 500 from the server 19 for a transfer, and a screen like drawing 8 (a) will be displayed on the monitor 505 of a receiving set 500. An addressee looks at the image 513 for authentication, and checks a transmitting person here. When an addressee cannot check a transmitting person or does not want to receive image data by the unknown transmitting person, the reception termination carbon button 511 is clicked with a mouse, and reception of image data is stopped. By completing such a procedure, an addressee can receive an unrelated image or it can prevent receiving the unpleasant image which slanders people. Moreover, a personal identification number is inputted in the personal identification number input frame 512 to receive image data. When a personal identification number is the same as that of what was recorded in the header of an image file, as shown in drawing 8 (b), the receiving carbon button 514 is displayed on a screen. If this carbon button 514 is clicked, an image data transfer will start and the bar 515 in which that percentage of completion is shown like drawing 8 (c) will be displayed. A transfer of an image displays the transfer image 516 on the whole screen like drawing 8 (d).

[0036] This invention is not restricted to the above-mentioned operation gestalt, and various deformation is possible for it. For example, the receiving set receives image data beforehand, and only when a personal identification number is inputted correctly, it may be made to have started reception of image data, after the addressee inputted the personal identification number, but to express the image data which received as an above-mentioned operation gestalt. Moreover, a specification which is decoded is also considered by performing scramble-ization for every line of the direction of vertical scanning of image data according to a mathematical regulation based on the numeric value of a personal identification number, and inputting a personal identification number correctly at this time. Moreover, with an above-mentioned operation gestalt, the image data of a digital camera may be transmitted to a direct receiving set from a digital camera, although it transmitted to the receiving set through the server for a transfer. Thereby, the configuration of a transmission system can be simplified.

[0037]

[Effect of the Invention] Since the information equivalent to a personal identification number or it was added to the image data which transmits at the time of the image data transmission from a digital camera as mentioned above according to invention of claim 1, only a specific person can peruse the image transmitted from the digital camera by the receiving side. Thereby, the transmitted image can prevent being perused by human being unspecified by the receiving side.

[0038] Moreover, since it becomes receivable [ image data ] when the authentication information inputted by the image data sink side and the authentication information transmitted from the digital camera side are in agreement according to invention of claim 2, only a specific person can peruse the image transmitted from the digital camera by the receiving side by telling only the specific person about authentication information. Thereby, the transmitted image can prevent being perused by the man unspecified by the receiving side.

[0039] Moreover, according to invention of claim 3, since it was displayed on the display means before reception of the image data, after performing body identification of a transmitting agency based on the authentication data at the time of reception with an image data sink, the authentication data added in the digital camera side at the time of image data transmission can operate a directions means, and can direct reception authorization of image data. Thereby, an addressee can prevent reception of unnecessary image data, such as an image unrelated to himself.

[0040] Moreover, as authentication data added with an authentication data addition means, by using the image data of a transmitting person's face, an addressee can distinguish easily the authentication data

displayed on the display means, and can acquire the effectiveness of a publication exactly to above-mentioned claim 3.

## TECHNICAL FIELD

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[Field of the Invention] This invention photos an image and relates to the digital camera which has the function to transmit the photoed image data through the server for a transfer etc. directly, and its picture transmission system.

## PRIOR ART

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[Description of the Prior Art] The picture transmission system which transmits conventionally the image data photoed with the digital camera to the receiving set of a remote place using the telephone line etc. is known. In this kind of system, the image data transmitted from the digital camera at the time of reception of image data is received directly, and there are what was displayed, and a thing which displayed the full-scale image data corresponding to the selected cutback image when the cutback image with which reception and cutback image display of cutback image data were first performed, and the addressee was displayed was chosen.

## EFFECT OF THE INVENTION

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[Effect of the Invention] Since the information equivalent to a personal identification number or it was added to the image data which transmits at the time of the image data transmission from a digital camera as mentioned above according to invention of claim 1, only a specific person can peruse the image transmitted from the digital camera by the receiving side. Thereby, the transmitted image can prevent being perused by human being unspecified by the receiving side.

[0038] Moreover, since it becomes receivable [ image data ] when the authentication information inputted by the image data sink side and the authentication information transmitted from the digital camera side are in agreement according to invention of claim 2, only a specific person can peruse the image transmitted from the digital camera by the receiving side by telling only the specific person about authentication information. Thereby, the transmitted image can prevent being perused by the man unspecified by the receiving side.

[0039] Moreover, according to invention of claim 3, since it was displayed on the display means before reception of the image data, after performing body identification of a transmitting agency based on the authentication data at the time of reception with an image data sink, the authentication data added in the digital camera side at the time of image data transmission can operate a directions means, and can direct reception authorization of image data. Thereby, an addressee can prevent reception of unnecessary image data, such as an image unrelated to himself.

[0040] Moreover, as authentication data added with an authentication data addition means, by using the image data of a transmitting person's face, an addressee can distinguish easily the authentication data displayed on the display means, and can acquire the effectiveness of a publication exactly to above-mentioned claim 3.

## TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, in the above conventional digital camera and its picture transmission system, since there is no transmission approach of specifying an addressee by the transmitting side so that only specific human being can peruse a transmitting image, human being unspecified by the receiving side will peruse the image transmitted from the digital camera. On the contrary, in a receiving side, since body identification of a transmitting agency was not able to be performed until it receives the image data, there was a possibility of having received the image which is completely unrelated, or receiving and displaying image data which slanders people.

[0004] Are made in order that this invention may solve the trouble mentioned above, and only a specific person enables it to peruse the image transmitted from the digital camera by the receiving side. Prevent the transmitted image being perused by the man unspecified by the receiving side, and an addressee enables it to identify the body of a transmitting person before reception of image data. It aims at offering the digital camera which can prevent reception of unnecessary image data, and its picture transmission system.

## MEANS

[Means for Solving the Problem] In order to attain the above-mentioned object invention of claim 1 The digital camera which photos an image and has the function to transmit the photoed image data through the server for a transfer etc. directly, It is the digital camera used for the picture transmission system which consists of image data sinks which receive and display the image data transmitted from this digital camera. It has an authentication information addition means to add the information equivalent to a personal identification number or it to the image data which transmits at the time of the image data transmission from a digital camera.

[0006] Since the information equivalent to a personal identification number or it can be added to the image data which transmits at the time of the image data transmission from a digital camera with an authentication information addition means in the above-mentioned configuration, only those who know the information equivalent to the personal identification number or it which was added to the image data transmitted by the receiving side can receive and peruse image data.

[0007] Moreover, the digital camera which has the function for invention of claim 2 to photo an image and to transmit the photoed image data through the server for a transfer etc. directly, In the picture transmission system equipped with the image data sink which receives and displays the image data transmitted from the digital camera a digital camera It has an authentication information addition means to add the information equivalent to a personal identification number or it to the image data which transmits at the time of the image data transmission from a digital camera. An image data sink When it is going to receive the image data transmitted from the digital camera It has an authentication information input means to input authentication information, and when the authentication information inputted by this authentication information input means and the authentication information transmitted from the digital camera are in agreement, it is made to become receivable [ image data ]. In this configuration, since it becomes receivable [ image data ] when the authentication information inputted by the authentication information input means and the authentication information transmitted from the digital camera are in agreement, only a specific person can peruse the transmitted image by the receiving side.

[0008] Moreover, the digital camera which has the function for invention of claim 3 to photo an image and to transmit the photoed image data through the server for a transfer etc. directly, In the picture transmission system equipped with the image data sink which receives and displays the image data transmitted from the digital camera a digital camera It has an authentication data addition means to add the authentication data for checking a transmitting person in advance of reception of the image data in an image data receiving side at the time of the image data transmission from a digital camera. A display means to display the authentication data to which the image data sink was added by the authentication data addition means, It has a directions means to direct reception authorization of the image data from a digital camera, and is made to perform reception and image display of the image data from a digital camera according to directions by the directions means. In this configuration, a transmitting person adds the authentication data for checking a transmitting person at the time of image data transmission, and after checking the authentication data displayed on the display means before image data reception, an addressee will direct reception authorization of the image data from a digital camera with a directions means, and will receive image data.

[0009] Moreover, the authentication data which an authentication data addition means adds can be made into the image data of a transmitting person's face. Thereby, in an addressee side, a transmitting person can be easily checked as the authentication data displayed on the display means are also.

[0010]

[Embodiment of the Invention] Hereafter, the digital camera equipped with the image recording system by 1 operation gestalt of this invention is explained with reference to a drawing. Drawing 1 thru/or drawing 3 show the transverse plane of the digital camera equipped with the image recording system by this operation gestalt, a tooth back, and a base. Drawing 4 shows the electric configuration of this digital camera. The digital camera 1 consists of the body section 2 of a camera of a core box, and the



rectangular parallelepiped-like image pick-up section 3. The image pick-up section 3 is seen from a transverse plane, and the right lateral of the body section 2 of a camera is equipped with it rotatable in removable, and this right lateral and an parallel field.

[0011] The image pick-up section 3 has image pick-up equipment which consists of optoelectric transducers, such as the taking lens 301 which consists of a macro zoom, and CCD (Charge Coupled Device), and the optical image of a photographic subject is changed into the image (image which consists of each pixel of CCD with the charge signal by which photo electric translation was carried out) which consists of an electrical signal, and it incorporates it. On the other hand, the body section 2 of a camera has the connection terminal 13 with which external connection of the display 10, the applied part 17 of a memory card 8, and personal computer which consist of LCD (Liquid Crystal Display) is made, and after it performs predetermined signal processing to the picture signal incorporated mainly in the above-mentioned image pick-up section 3, it processes the display to the LCD display 10, record to a memory card 8, the transfer to a personal computer, etc.

[0012] The macro zoom lens 301 is arranged in the interior of the image pick-up section 3, and the image pick-up circuit which equipped the proper place of the back location of this macro zoom lens 301 with the CCD color area sensor 303 is established in it. Moreover, the modulated light circuit 304 equipped with the modulated light sensor 305 which receives the reflected light from the photographic subject of flash plate light is established in the proper place in the image pick-up section 3.

[0013] As shown in drawing 1, the infrared transceiver section IR for the grip section 4 being prepared for the proper place of the left end section, and giving the up proper place of a right edge the data transfer of the built-in flash plate 5 and external instruments, such as a personal computer, is formed in the front face of the body section 2 of a camera. Moreover, the switches 6 and 7 for coma delivery at the time of reproducing a record image are formed in the center of abbreviation on the top face of the body section 2 of a camera. A switch 6 is a switch (henceforth UP switch) for carrying out coma delivery of the record image in the direction (the direction of the order of photography) in which a coma number increases, and a switch 7 is a switch (henceforth a DOWN switch) for carrying out coma delivery of the record image in the direction in which a coma number decreases. Moreover, in view of the tooth-back side, the elimination switch D for eliminating the image recorded on the memory card 8 is formed in the left-hand side of the DOWN switch 7, and the shutter carbon button 9 is formed in the right-hand side of the UP switch 6.

[0014] In the tooth back of the body section 2 of a camera, as shown in drawing 2, the LCD display 10 for performing the monitor display (equivalent to a view finder) of a photography image, the repeat display of a record image, etc. is formed in the center of abbreviation of the left end section. Moreover, the return switch ESC for giving the cancellation directions of the content which change the content of a display of floor line mode setting key 11 about flash plate luminescence, electric power switch PS, and the LCD display 10 and which it display-changeover-switch-DISP(ed) and were inputted is formed in the upper part location of the LCD display 10. The compressibility configuration switch 12 for carrying out switch setting out of the compressibility K of the image data recorded on a memory card 8 is formed in the lower part location of the LCD display 10 further again.

[0015] The "automatic luminescence mode" in which the built-in flash plate 5 is made to emit light automatically in a digital camera 1 according to photographic subject brightness as the mode about flash plate luminescence, "The compulsive luminescence mode" in which the built-in flash plate 5 is made to emit light compulsorily regardless of photographic subject brightness, And whenever the "luminescence prohibition mode" in which luminescence of the built-in flash plate 5 is forbidden is formed and it presses the above-mentioned floor line mode setting key 11, each mode of "automatic luminescence", "compulsive luminescence", and "prohibition on luminescence" switches cyclically, and selection setting out of one of the modes is carried out. Moreover, a digital camera 1 will be set as compressibility  $K=1/8$ , if selection setting out is possible for two kinds of compressibility, one eighth and  $1/20$ , K, for example, it slides the compressibility configuration switch 12 to the right, and if it slides to the left, it will be set as compressibility  $K=1/20$ . Moreover, with this operation gestalt, although it could be made to carry out selection setting out of two kinds of compressibility K, it is made to carry out selection

setting out of three or more kinds of compressibility K.

[0016] Furthermore, the mode setting switch 14 for carrying out switch setting out of "photography mode", a "playback mode", "transfer mode", and the "utility mode" is formed in the right end upper part of the tooth back of the body section 2 of a camera. The mode in which photography mode takes a photograph, the mode which carries out the repeat display of the photography image with which the playback mode was recorded on the memory card 8, and the image recorded on other external image recording equipments to the LCD display 10, the mode in which transfer mode transmits image data to the server for a transfer, and a utility mode are the modes which can use various utilities. If the mode setting switch 14 also consists of a slide switch of two contacts, for example, it slides to the right, photography mode will be set up, if it slides in the center, a playback mode will be set up, and a utility mode will be set up, if it slides to the left and will slide to transfer mode and further the left.

[0017] The cell material well 18 and the card material well 17 of a memory card 8 are formed in the base of the body section 2 of a camera, and loading opening of both the material wells 17 and 18 is blockaded with the clamshell type lid 15. the digital camera 1 in this operation gestalt -- four AA -- the power-source cell which comes to carry out the series connection of the form dry cell is made into the driving source.

[0018] In drawing 4, CCD303 carries out photo electric translation of the light figure of the photographic subject by which image formation was carried out with the macro zoom lens 301 to the picture signal (signal which consists of a signal train of the pixel signal received by each pixel) of the color component of R (red), G (green), and B (blue), and outputs it to it. A timing generator 314 generates various kinds of timing pulses for controlling actuation of CCD303. Since drawing is fixed drawing, exposure control in the image pick-up section 3 is performed by adjusting the charge storage time of CCD303 equivalent to the light exposure, i.e., the shutter speed, of CCD303. Since photographic subject brightness is low brightness, when it cannot be set as a suitable shutter speed, the unsuitable forward exposure depended insufficient [ exposure ] is amended by performing level adjustment of the picture signal outputted from CCD303. That is, exposure control is performed combining shutter speed and a gain adjustment at the time of low brightness. Level adjustment of a picture signal is performed in the gain adjustment in the AGC circuit in a digital disposal circuit 313.

[0019] The above-mentioned timing generator 314 generates the actuation control signal of CCD303 based on the reference clock transmitted from the timing-control circuit 202. A timing generator 314 generates clock signals, such as read-out control signals (a Horizontal Synchronizing signal, a Vertical Synchronizing signal, transfer signal, etc.) of the timing signal of for example, integral initiation / termination (exposure initiation / termination), and the light-receiving signal of each pixel, and outputs them to CCD303. Moreover, a digital disposal circuit 313 performs predetermined analog signal processing to the picture signal (analog signal) outputted from CCD303. A digital disposal circuit 313 has a CDS (correlation duplex sampling) circuit and an AGC (automatic gain control) circuit, reduces the noise of a picture signal by the CDS circuit, and performs level adjustment of a picture signal by carrying out the gain adjustment in an AGC circuit.

[0020] The modulated light circuit 304 controls the amount of luminescence of the built-in flash plate 5 in flash plate photography in the predetermined amount of luminescence set up by the whole control section 211. In flash plate photography, if the reflected light of the flash plate light from a photographic subject is received by exposure initiation and coincidence by the modulated light sensor 305 and this light income reaches the predetermined amount of luminescence, the luminescence stop signal to the flash plate control circuit 214 (henceforth floor line control circuit) prepared in the body section 2 of a camera from the modulated light circuit 304 will be outputted. The floor line control circuit 214 answers this luminescence stop signal, luminescence of the built-in flash plate 5 is stopped compulsorily, and, thereby, the amount of luminescence of the built-in flash plate 5 is controlled by the predetermined amount of luminescence.

[0021] In the body section 2 of a camera, the timing-control circuit 202 which generates the clock to a reference clock, a timing generator 314, and A/D converter 205 is formed. This timing-control circuit 202 is controlled by the whole control section 211. Moreover, A/D converter 205 changes each pixel

signal of a picture signal into a 10-bit digital signal. A/D converter 205 changes each pixel signal (analog signal) into a 10-bit digital signal based on the clock for A/D conversion inputted from a non-illustrated A/D clock generation circuit.

[0022] The black level amendment circuit 206 amends the black level of the pixel signal (henceforth pixel data) by which A/D conversion was carried out to the black level of criteria. Moreover, the WB circuit 207 performs the level conversion of the pixel data of each color component of R, G, and B so that a white balance may also be doubled and adjusted after gamma amendment (signal transformation for carrying out reverse amendment of the reverse linearity of a recording characteristic, and bringing record concentration close to linearity more). The WB circuit 207 changes the level of the pixel data of each color component of R, G, and B using the level-conversion table inputted from the whole control section 211. In addition, the transform coefficient (inclination of a property) of each color component of a level-conversion table is set up by the whole control section 211 for every photography image. A gamma correction circuit 208 amends the gamma characteristics of pixel data. A gamma correction circuit 208 has six kinds of gamma amendment tables on which gamma characteristics differ, and performs gamma amendment of pixel data on predetermined gamma amendment table according to a photography scene or photography conditions.

[0023] An image memory 209 is memory which memorizes the pixel data outputted from a gamma correction circuit 208. The image memory 209 has the storage capacity for one frame. That is, when CCD303 has the pixel of a n line m train, an image memory 209 has the pixel data storage capacity for a nxm pixel, and is memorized in the pixel location where each pixel data corresponds. VRAM (Video Random Access Memory)210 is the buffer memory of the image data by which a repeat display is carried out to the LCD display 10. VRAM210 has the image data storage capacity corresponding to the number of pixels of the LCD display 10.

[0024] In a photography standby condition, after predetermined signal processing is performed to each pixel data of the image picturized by every 1/30 (second) by the image pick-up section 3 by A/D converter 205, the black level amendment circuit 206, the WB circuit 207, and the gamma correction circuit 208, while memorizing in an image memory 209, it is transmitted to VRAM210 through the whole control section 211, and is displayed on the LCD display 10. Thereby, a photography person can check a photographic subject image with the image displayed on the LCD display 10. Moreover, in a playback mode, after signal processing predetermined by the whole control section 211 is performed to the image by which reading appearance was carried out from the memory card 8, it is transmitted to VRAM210 and a repeat display is carried out to the LCD display 10.

[0025] Card I/F212 is an interface for performing writing of the image data to a memory card 8, and read-out of image data. Moreover, I/F213 for a communication link is an infrared interface (IrDA), in order to make possible external connection of the communication link of a personal computer 19. It is the based interface. This personal computer 19 is used as a server for a transfer, in case the image data from a digital camera 1 is transmitted to a receiving set.

[0026] A modem 401 becomes irregular so that data transfer can do the image data which added the addition data for a transfer through the telephone line. Although the image data of a digital camera 1 is transmitted to a receiving set through the server 19 for a transfer with this operation gestalt; it is also possible to transmit direct image data to a receiving set from a digital camera 1 using a modem 401.

[0027] The floor line control circuit 214 is a circuit which controls luminescence of the built-in flash plate 5. The floor line control circuit 214 controls existence, the amount of luminescence, luminescence timing, etc. of luminescence of the built-in flash plate 5 based on the control signal of the whole control section 211, and controls the amount of luminescence of the built-in flash plate 5 based on the luminescence stop signal inputted from the modulated light circuit 304. Moreover, RTC219 is a clock circuit for managing photography time, and is driven by another non-illustrated cell. Moreover, a control unit 250 is a switch equivalent to the UP switch 6 mentioned above, the DOWN switch 7, the shutter carbon button 9, floor line mode setting key 11, the compressibility configuration switch 12, the mode setting switch 14, the return switch ESC, and display changeover switch DISP.

[0028] The whole control section 211 consists of a microcomputer, controls organically actuation of

each part material in the image pick-up section 3 mentioned above and the body section 2 of a camera, and carries out generalization control of the photography actuation of a digital camera 1.

[0029] In photography mode, if photography is directed with the shutter carbon button 9, as shown in drawing 5 R> 5, the whole above-mentioned control section 211 The thumbnail image of the image captured after photography directions in the image memory 209 (low resolution picture for cutback image display), The compression image compressed with the JPEG (Joint Photographic Experts Group) method by the compressibility K set up by the compressibility configuration switch 12 is generated. Both images are memorized to a memory card 8 with the tag information (information, such as a coma number, exposure value, shutter speed, compressibility K, a photography day, data of turning on and off of the flash plate at the time of photography, scene information, and a judgment result of an image) about a photography image. In a memory card 8, the image of 40 coma can be memorized with compressibility 1/20, and the image data (640x480 pixels) of the high resolution compressed in tag information and a JPEG format and the image data for a thumbnail display (80x60 pixels) are recorded on each coma. It is possible to treat in each coma unit as an image file of for example, an EXIF format (a kind of the file format based on JPEG). The data of turning on and off of the flash plate at the time of a photography day and photography etc. are stored in the tag. Moreover, a photography person name, a personal identification number, and the data for authentication are also recorded in this tag.

[0030] Next, the image data transfer procedure after the digital camera photography which is the description of this invention, the personal identification number at the time of image data transfer, and the setting-out approach of authentication data are explained. This digital camera 1 has given the same operability as GUI (Graphical User Interface) of a personal computer. When there is an event [ in setting out of a utility etc. ] to be chosen according to a user, a message box (dialog) is displayed on the LCD display 10. The depression of the shutter carbon button 9 is defined as actuation which means affirmation, and the depression of the UP switch 6 and the DOWN switch 7 is defined as actuation of sequential selection of a selection branch. Moreover, the depression of the return switch ESC is defined as the shift (return) to the upper layer from current setting-out mode, the drawback of actuation, and actuation of cancellation.

[0031] With this operation gestalt, the image data in the memory card 8 of a digital camera 1 is transmitted to a receiving set 500 through the server 19 for a transfer. When transmitting image data, the mode of a digital camera 1 is changed to image data transfer mode with the mode setting switch 14. If it goes into image data transfer mode, a display like drawing 6 (a) will be displayed on the LCD display 10, and the head image in a memory card 8 will be displayed on the image selection window 101. Here, a selection setting-out item (display which shows whether the item of throats, such as a cross hair and inverse video, is chosen) moves by pushing the UP switch 6 and the DOWN switch 7 between the items of the image selection window 101 and the "degree" carbon button 102. If the shutter carbon button 9 is pushed here at the time of image selection window 101 selection (when the selection setting-out item is located on the image selection window 101), the image selection window 101 will be chosen. Next, if the UP switch 6 and the DOWN switch 7 are operated according to directions of the dialog 103 which directs image selection, as for the front stirrup in a memory card 8, the image in the image window 101 will be updated by the following image. If the shutter carbon button 9 is pushed in the condition that the image to transmit in the image window 101 is displayed, the image currently displayed at the event will be determined as an image for a transfer, and a selection setting-out item will move to the "degree" carbon button 102. If the shutter carbon button 9 is pushed here, the "degree" carbon button 102 will be operated and a screen for a personal identification number input like drawing 6 (b) will be displayed.

[0032] Next, a personal identification number is inputted by the following approaches in the input frame 104 of the alphabet of five characters shown in drawing 6 (b). the UP switch 6 is pushed -- \*\* -- alike -- a candidate Roman alphabet -- a->b->c-> -- since it changes with ....., an alphabetic character is determined by pushing the shutter carbon button 9 in the place where the alphabetic character of hope appeared. Since the cursor location in the input frame 104 will shift to the single-character part right if an alphabetic character is determined, the following alphabetic character is inputted. Thus, an input of all alphabetic characters displays the "degree" carbon button 102 like drawing 6 (c). Here, since a screen

like drawing 6 (d) will be displayed, the dialog 105 which directs photography of the data for authentication on a screen will be displayed, if the shutter carbon button 9 is pushed and a transmitting person is specified according to this, a transmitting person's own face is photoed. Although this digital camera 1 usually memorizes an image on a memory card 8 at the time of photography, since the image photoed as image data for authentication is temporary data at the time of a transfer, it is held in the buffer for images. Moreover, the image resolution which is extent which a transmitting person can specify is sufficient as this image data for authentication, rather than the usual photography data, it is a low resolution and a compression ratio is also set up highly. If a transmitting person's face is photoed, setting out of authentication data will be completed, photography image data will be held in the image memory 209 in a camera, and the screen on the LCD display 10 will turn into a screen like drawing 6 (e).

[0033] Next, if the shutter carbon button 9 is pushed, the "degree" carbon button 102 will be operated, it will become a screen like drawing 6 (f), and the image 106 for authentication will be displayed on a screen. Since all data required for image data transfer at this were assembled, the data transmission of it is attained. If the shutter carbon button 9 is pushed here, the transmitting carbon button 107 will be operated, data transfer will be started, and the progress will be displayed like drawing 6 (g). And after ending all data transmission, it becomes a screen display like drawing 6 (h). Image data is transmitted to the server 19 for a transfer through such actuation.

[0034] Next, the configuration and actuation by the side of a receiving set are explained with reference to drawing 7 and drawing 8. A receiving set 500 consists of the modem 502 which connects with the telephone line 501 and performs the strange recovery of a transmitted and received data, CPU503 which performs control of the whole equipment, ROM504 which stores the data receiving software of dedication, a display (monitor) 505, an image memory 506 where the received image is saved, and a control unit 507 which consists of a mouse and a keyboard. This receiving set 500 can receive the image data of the digital camera 1 stored in the server 19 for a transfer through the telephone line 501.

[0035] Starting of the data receiving software stored in ROM504 performs dialup actuation to the server 19 for a transfer through a modem 502 periodically according to directions of a user from a receiving set 500. If new image data is transmitted to the server 19 for a transfer here, a part for the header unit of an image file (a photography person name, a personal identification number, and the data for authentication are included) will be sent to a receiving set 500 from the server 19 for a transfer, and a screen like drawing 8 (a) will be displayed on the monitor 505 of a receiving set 500. An addressee looks at the image 513 for authentication, and checks a transmitting person here. When an addressee cannot check a transmitting person or does not want to receive image data by the unknown transmitting person, the reception termination carbon button 511 is clicked with a mouse, and reception of image data is stopped. By completing such a procedure, an addressee can receive an unrelated image or it can prevent receiving the unpleasant image which slanders people. Moreover, a personal identification number is inputted in the personal identification number input frame 512 to receive image data. When a personal identification number is the same as that of what was recorded in the header of an image file, as shown in drawing 8 (b), the receiving carbon button 514 is displayed on a screen. If this carbon button 514 is clicked, an image data transfer will start and the bar 515 in which that percentage of completion is shown like drawing 8 (c) will be displayed. A transfer of an image displays the transfer image 516 on the whole screen like drawing 8 (d).

[0036] This invention is not restricted to the above-mentioned operation gestalt, and various deformation is possible for it. For example, the receiving set receives image data beforehand, and only when a personal identification number is inputted correctly, it may be made to have started reception of image data, after the addressee inputted the personal identification number, but to express the image data which received as an above-mentioned operation gestalt. Moreover, a specification which is decoded is also considered by performing scramble-ization for every line of the direction of vertical scanning of image data according to a mathematical regulation based on the numeric value of a personal identification number, and inputting a personal identification number correctly at this time. Moreover, with an above-mentioned operation gestalt, the image data of a digital camera may be transmitted to a

direct receiving set from a digital camera, although it transmitted to the receiving set through the server for a transfer. Thereby, the configuration of a transmission system can be simplified.

DESCRIPTION OF DRAWINGS

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## [Brief Description of the Drawings]

[Drawing 1] It is the front view of the digital camera by 1 operation gestalt of this invention.

[Drawing 2] It is the rear view of a digital camera.

[Drawing 3] It is the bottom view of a digital camera.

[Drawing 4] It is the block diagram showing the electric configuration of a digital camera.

[Drawing 5] It is drawing showing the data array in a memory card.

[Drawing 6] It is the explanatory view of the image data transfer procedure photoed with the digital camera.

[Drawing 7] It is the block diagram showing the electric configuration of a receiving set.

[Drawing 8] It is the explanatory view of the image data reception actuation by the side of a receiving set.

## [Description of Notations]

1 Digital Camera

6 UP Switch (Authentication Information Addition Means)

9 Shutter Carbon Button (Authentication Information Addition Means)

104 Input Frame (Authentication Information Addition Means)

211 Whole Control Section (Authentication Information Addition Means, Authentication Data Addition Means)

303 CCD (Authentication Data Addition Means)

500 Receiving Set (Image Data Sink)

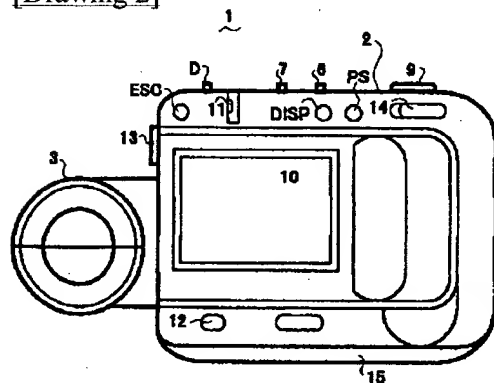
504 Personal Identification Number Input Frame (Authentication Information Input Means)

505 Monitor (Display Means)

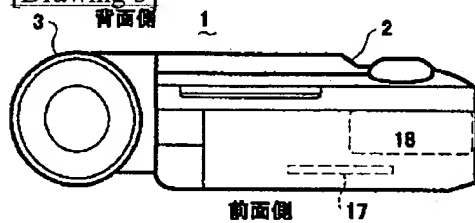
507 Control Unit (Directions Means, Authentication Information Input Means)

## DRAWINGS

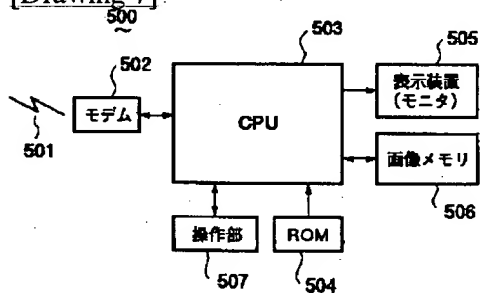
[Drawing 2]



[Drawing 3]

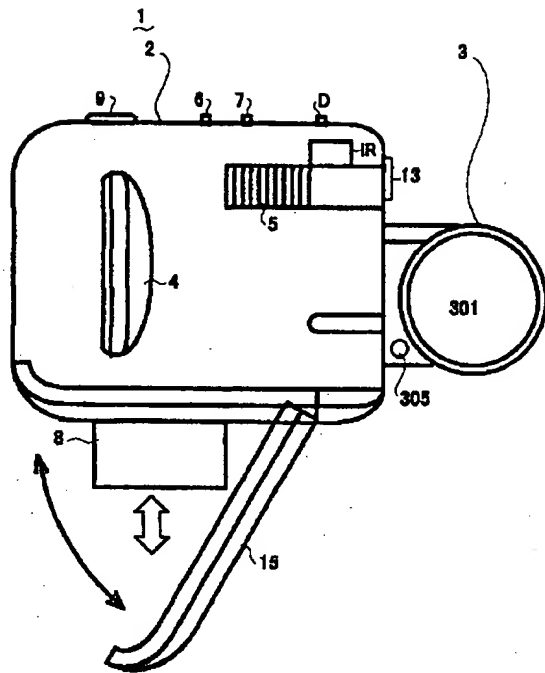


[Drawing 7]

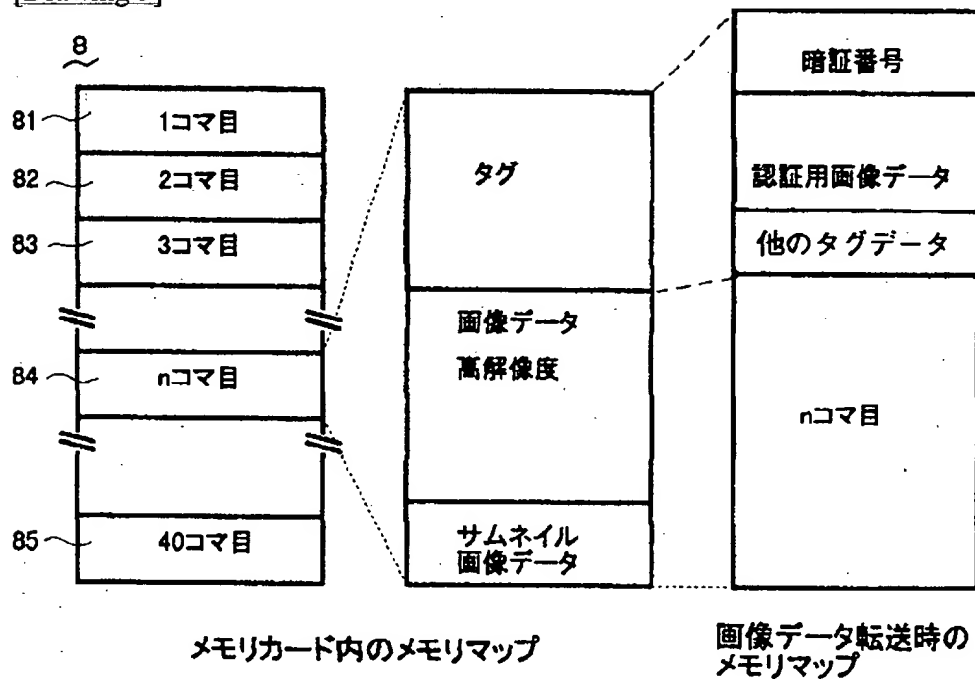


[Drawing 1]

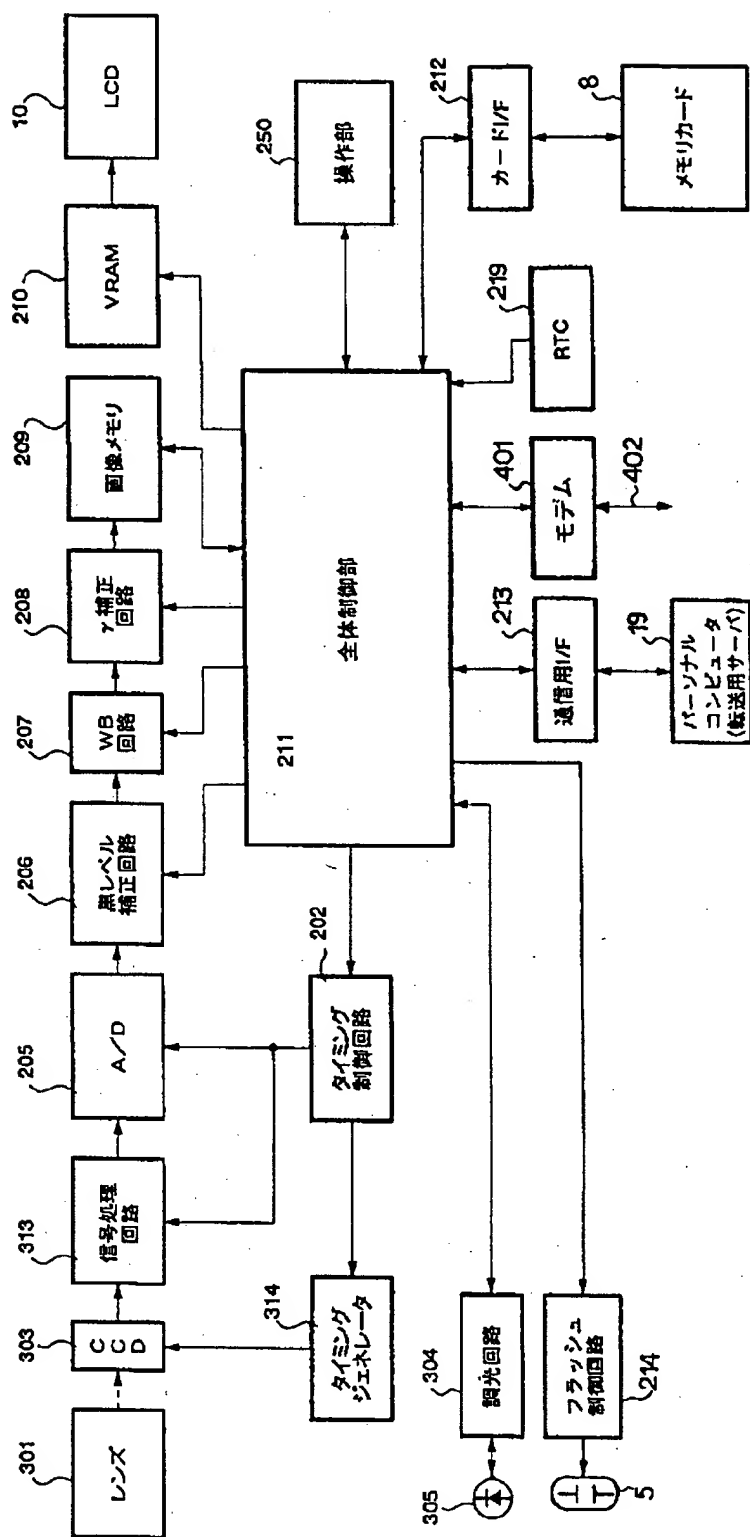




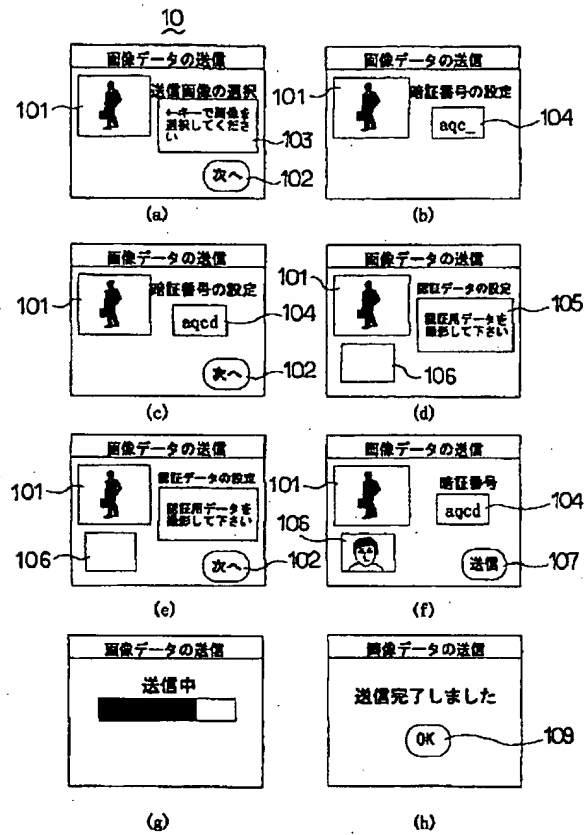
[Drawing 5]



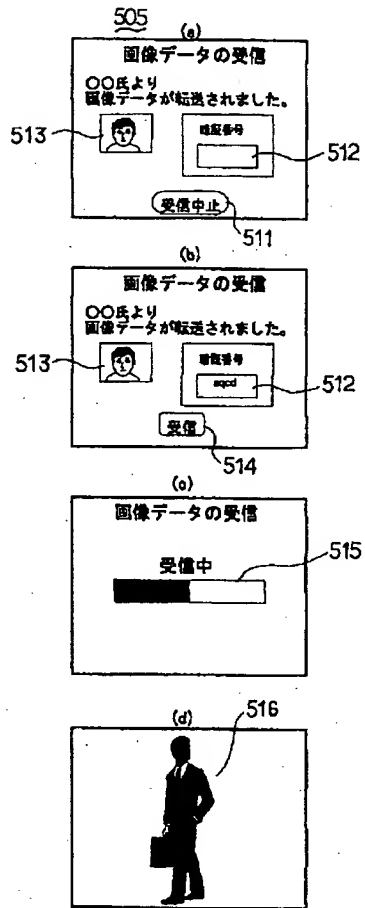
[Drawing 4]



[Drawing 6]



[Drawing 8]



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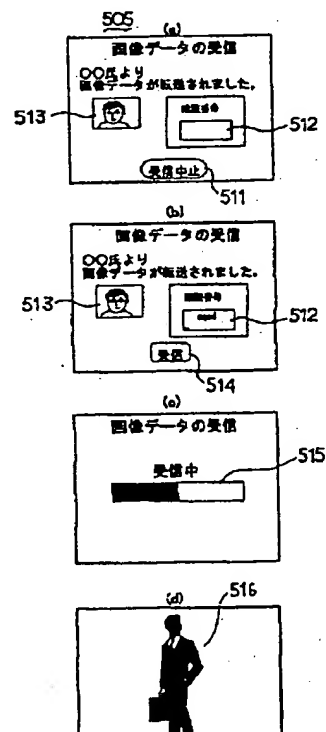
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(54) 【発明の名称】 デジタルカメラ及び画像伝送システム

## (57) 【要約】

【課題】 デジタルカメラ及びその画像伝送システムにおいて、デジタルカメラから送信された画像が受信側で不特定の者に閲覧されてしまうことを防ぎ、また、受信側で不要な画像データの受信を防ぐ。

【解決手段】 送信者は画像データ送信時に送信者を確認するための認証データを付加し、受信者は画像データ受信前に受信装置 5 0 0 のモニタ 5 0 5 に表示された認証データ 5 1 3 を確認した上で、受信ボタン 5 1 4 又は受信中止ボタン 5 1 1 によりデジタルカメラからの画像データの受信の許可／不許可を指示する。これにより、受信側で不要な画像データの受信を防ぐことができる。



## 【特許請求の範囲】

【請求項 1】 画像を撮影し、撮影した画像データを直接に又は転送用サーバ等を介して送信する機能を有するデジタルカメラと、このデジタルカメラから送信された画像データを受信して表示する画像データ受信装置とから構成される画像伝送システムに用いられるデジタルカメラであって、

デジタルカメラからの画像データ送信時に、送信する画像データに暗証番号又はそれに相当する情報を付加する認証情報付加手段を備えたことを特徴とするデジタルカメラ。

【請求項 2】 画像を撮影し、撮影した画像データを直接に又は転送用サーバ等を介して送信する機能を有するデジタルカメラと、デジタルカメラから送信された画像データを受信して表示する画像データ受信装置とを備えた画像伝送システムにおいて、

上記デジタルカメラは、デジタルカメラからの画像データ送信時に、送信する画像データに暗証番号又はそれに相当する情報を付加する認証情報付加手段を備え、

上記画像データ受信装置は、上記デジタルカメラから送信された画像データを受信しようとする時に、認証情報を入力する認証情報入力手段を備え、この認証情報入力手段により入力された認証情報と上記デジタルカメラから送信された認証情報とが一致したときに、画像データの受信が可能となるようにしたことを特徴とする画像伝送システム。

【請求項 3】 画像を撮影し、撮影した画像データを直接に又は転送用サーバ等を介して送信する機能を有するデジタルカメラと、デジタルカメラから送信された画像データを受信して表示する画像データ受信装置とを備えた画像伝送システムにおいて、

上記デジタルカメラは、画像データ送信時に、画像データ受信側での画像データの受信に先立って送信者を確認するための認証データを付加する認証データ付加手段を備え、

上記画像データ受信装置は、上記認証データ付加手段により付加された認証データを表示する表示手段と、上記デジタルカメラからの画像データの受信許可を指示する指示手段とを備え、上記指示手段による指示に応じて、上記デジタルカメラからの画像データの受信と画像表示を行うようにしたことを特徴とする画像伝送システム。

【請求項 4】 上記認証データ付加手段が付加する認証データは、送信者の顔の画像データであることを特徴とする請求項 3 に記載の画像伝送システム。

## 【発明の詳細な説明】

## 【 0 0 0 1 】

【発明の属する技術分野】 本発明は、画像を撮影し、撮影した画像データを直接に又は転送用サーバ等を介して送信する機能を有するデジタルカメラ及びその画像伝送システムに関するものである。

## 【 0 0 0 2 】

【従来の技術】 従来より、デジタルカメラで撮影した画像データを電話回線などを用いて遠隔地の受信装置に伝送する画像伝送システムが知られている。この種のシステムにおいて、画像データの受信時に、デジタルカメラから送信された画像データを直接受信し、表示するようになったものや、先ず縮小画像データの受信と縮小画像表示を行い、受信者が表示された縮小画像を選択した場合には、選択した縮小画像に対応するフルスケールの画像データを表示するようにしたものがある。

## 【 0 0 0 3 】

【発明が解決しようとする課題】 しかしながら、上記のような従来のデジタルカメラ及びその画像伝送システムでは、特定の人間のみ送信画像を閲覧できるように送信側で受信者を特定する伝送方法がないため、デジタルカメラから送信された画像を受信側で不特定の人間に閲覧されてしまう。逆に、受信側では、その画像データを受信するまで送信元の身元確認を行えないために、全く関係のない画像を受信したり、人を中傷するような画像データを受信し表示するといった虞があった。

【 0 0 0 4 】 本発明は、上述した問題点を解決するためになされたものであり、デジタルカメラから送信された画像を受信側で特定の者だけが閲覧することができるようにして、送信された画像が受信側で不特定の人間に閲覧されてしまうことを防ぎ、また、受信者が画像データの受信前に送信者の身元確認を行うことができるようにして、不要な画像データの受信を防ぐことが可能なデジタルカメラ及びその画像伝送システムを提供することを目的とする。

## 【 0 0 0 5 】

【課題を解決するための手段】 上記目的を達成するために請求項 1 の発明は、画像を撮影し、撮影した画像データを直接に又は転送用サーバ等を介して送信する機能を有するデジタルカメラと、このデジタルカメラから送信された画像データを受信して表示する画像データ受信装置とから構成される画像伝送システムに用いられるデジタルカメラであって、デジタルカメラからの画像データ送信時に、送信する画像データに暗証番号又はそれに相当する情報を付加する認証情報付加手段を備えたものである。

【 0 0 0 6 】 上記構成においては、デジタルカメラからの画像データ送信時に、送信する画像データに暗証番号又はそれに相当する情報を認証情報付加手段により付加することができるので、受信側で送信された画像データに付加された暗証番号又はそれに相当する情報を知っている者だけが画像データを受信し、閲覧することができる。

【 0 0 0 7 】 また、請求項 2 の発明は、画像を撮影し、撮影した画像データを直接に又は転送用サーバ等を介して送信する機能を有するデジタルカメラと、デジタルカ

メラから送信された画像データを受信して表示する画像データ受信装置とを備えた画像伝送システムにおいて、デジタルカメラは、デジタルカメラからの画像データ送信時に、送信する画像データに暗証番号又はそれに相当する情報を付加する認証情報付加手段を備え、画像データ受信装置は、デジタルカメラから送信された画像データを受信しようとする時に、認証情報を入力する認証情報入力手段を備え、この認証情報入力手段により入力された認証情報とデジタルカメラから送信された認証情報とが一致したときに、画像データの受信が可能となるようにしたものである。この構成においては、認証情報入力手段により入力された認証情報とデジタルカメラから送信された認証情報とが一致したときに、画像データの受信が可能となるので、送信された画像を受信側で特定の者だけが閲覧することができる。

【 0 0 0 8 】 また、請求項 3 の発明は、画像を撮影し、撮影した画像データを直接に又は転送用サーバ等を介して送信する機能を有するデジタルカメラと、デジタルカメラから送信された画像データを受信して表示する画像データ受信装置とを備えた画像伝送システムにおいて、デジタルカメラは、デジタルカメラからの画像データ送信時に、画像データ受信側での画像データの受信に先立って送信者を確認するための認証データを付加する認証データ付加手段を備え、画像データ受信装置は、認証データ付加手段により付加された認証データを表示する表示手段と、デジタルカメラからの画像データの受信許可を指示する指示手段とを備え、指示手段による指示に応じて、デジタルカメラからの画像データの受信と画像表示を行うようにしたものである。この構成においては、送信者は画像データ送信時に送信者を確認するための認証データを付加し、受信者は画像データ受信前に表示手段に表示された認証データを確認した上で、指示手段によりデジタルカメラからの画像データの受信許可を指示して、画像データを受信することになる。

【 0 0 0 9 】 また、認証データ付加手段が付加する認証データは、送信者の顔の画像データとすることができる。これにより、受信者側では表示手段に表示された認証データでもって容易に送信者を確認することができる。

【 0 0 1 0 】

【 発明の実施の形態 】 以下、本発明の一実施形態による画像記録システムを備えたデジタルカメラについて図面を参照して説明する。図 1 乃至図 3 は本実施形態による画像記録システムを備えたデジタルカメラの正面、背面、及び底面を示す。図 4 はこのデジタルカメラの電気的構成を示す。デジタルカメラ 1 は、箱型のカメラ本体部 2 と直方体状の撮像部 3 とから構成されている。撮像部 3 は、正面から見てカメラ本体部 2 の右側面に着脱可能、かつ、この右側面と平行な面内に回動可能に装着さ

【 0 0 1 1 】 撮像部 3 は、マクロズームからなる撮影レンズ 3 0 1 及び CCD (Charge Coupled Device) 等の光電変換素子からなる撮像装置を有し、被写体の光学像を電気信号からなる画像 (CCD の各画素で光電変換された電荷信号により構成される画像) に変換して取り込むものである。一方、カメラ本体部 2 は、LCD (Liquid Crystal Display) からなる表示部 1 0、メモリカード 8 の装着部 1 7 及びパーソナルコンピュータが外部接続される接続端子 1 3 を有し、主として上記撮像部 3 で取り込まれた画像信号に所定の信号処理を施した後、LCD 表示部 1 0 への表示、メモリカード 8 への記録、パーソナルコンピュータへの転送等の処理を行なうものである。

【 0 0 1 2 】 撮像部 3 の内部には、マクロズームレンズ 3 0 1 が配設され、このマクロズームレンズ 3 0 1 の後方位位置の適所に CCD カラーエリアセンサ 3 0 3 を備えた撮像回路が設けられている。また、撮像部 3 内の適所にフラッシュ光の被写体からの反射光を受光する調光センサ 3 0 5 を備えた調光回路 3 0 4 が設けられている。

【 0 0 1 3 】 カメラ本体部 2 の前面には、図 1 に示すように、左端部の適所にグリップ部 4 が設けられており、また、右端部の上部適所に内蔵フラッシュ 5 と、パーソナルコンピュータ等の外部機器とのデータの転送を行うための赤外線送受信部 I R が設けられている。また、カメラ本体部 2 の上面には、略中央に記録画像を再生する際のコマ送り用のスイッチ 6、7 が設けられている。スイッチ 6 は、記録画像をコマ番号が増大する方向 (撮影順の方向) にコマ送りするためのスイッチ (以下、UP スイッチという。) であり、スイッチ 7 は、記録画像をコマ番号が減少する方向にコマ送りするためのスイッチ (以下、DOWN スイッチという。) である。また、背面側からみて DOWN スイッチ 7 の左側にメモリカード 8 に記録された画像を消去するための消去スイッチ D が設けられており、また、UP スイッチ 6 の右側にシャッターボタン 9 が設けられている。

【 0 0 1 4 】 カメラ本体部 2 の背面には、図 2 に示すように、左端部の略中央に撮影画像のモニタ表示 (ビューファインダーに相当) 及び記録画像の再生表示等を行なうための LCD 表示部 1 0 が設けられている。また、LCD 表示部 1 0 の上方位置にフラッシュ発光に関する F L モード設定キー 1 1、電源スイッチ P S、LCD 表示部 1 0 の表示内容を切り替える表示切り替えスイッチ D 1 S P、及び入力した内容の取り消し指示を与えるための戻りスイッチ E S C が設けられている。さらにまた、LCD 表示部 1 0 の下方位置には、メモリカード 8 に記録される画像データの圧縮率 K を切り換え設定するための圧縮率設定スイッチ 1 2 が設けられている。

【 0 0 1 5 】 デジタルカメラ 1 には、フラッシュ発光に関するモードとして被写体輝度に応じて自動的に内蔵フラッシュを発光させる「自動発光モード」、被写体輝

度に関係なく内蔵フラッシュ5を強制的に発光させる「強制発光モード」、及び内蔵フラッシュ5の発光を禁止する「発光禁止モード」が設けられており、上記FLモード設定キー11を押す毎に「自動発光」、「強制発光」及び「発光禁止」の各モードがサイクリックに切り換わり、いずれかのモードが選択設定されるようになっている。また、デジタルカメラ1は、1/8と1/20の2種類の圧縮率Kが選択設定可能であり、例えば圧縮率設定スイッチ12を右にスライドすると、圧縮率K=1/8に設定され、左にスライドすると、圧縮率K=1/20に設定される。また、本実施形態では、2種類の圧縮率Kを選択設定できるようにしたが、3種類以上の圧縮率Kを選択設定できるようにしてもよい。

【0016】さらに、カメラ本体部2の背面の右端上部には、「撮影モード」と「再生モード」と「転送モード」と「ユーティリティモード」とを切り換え設定するためのモード設定スイッチ14が設けられている。撮影モードは写真撮影を行なうモード、再生モードはメモリカード8に記録された撮影画像と他の外部画像記録装置に記録された画像をLCD表示部10に再生表示するモード、転送モードは画像データを転送用サーバに転送するモード、ユーティリティモードは種々のユーティリティの使用が可能なモードである。モード設定スイッチ14も2接点のスライドスイッチからなり、例えば右にスライドすると、撮影モードが設定され、中央にスライドすると再生モードが設定され、左にスライドすると転送モード、さらに左にスライドするとユーティリティモードが設定される。

【0017】カメラ本体部2の底面には、電池装填室18とメモリカード8のカード装填室17とが設けられており、両装填室17、18の装填口は、クラムシェルタイプの蓋15により閉塞されるようになっている。本実施形態におけるデジタルカメラ1は、4本の単三形乾電池を直列接続してなる電源電池を駆動源としている。

【0018】図4において、CCD303は、マクロズームレンズ301により結像された被写体の光像を、R（赤）、G（緑）、B（青）の色成分の画像信号（各画素で受光された画素信号の信号列からなる信号）に光電変換して出力する。タイミングジェネレータ314は、CCD303の駆動を制御するための各種のタイミングパルスを生成するものである。撮像部3における露出制御は、絞りが固定絞りとなっているので、CCD303の露光量、すなわち、シャッタースピードに相当するCCD303の電荷蓄積時間を調節して行なわれる。被写体輝度が低輝度であるため適切なシャッタースピードに設定できない場合は、CCD303から出力される画像信号のレベル調整を行なうことにより露光不足による不適正露出が補正される。すなわち、低輝度時は、シャッタースピードとゲイン調整とを組み合わせることで露出制御が行な

われる。

【0019】上記タイミングジェネレータ314は、タイミング制御回路202から送信される基準クロックに基づきCCD303の駆動制御信号を生成するものである。タイミングジェネレータ314は、例えば積分開始/終了（露出開始/終了）のタイミング信号、各画素の受光信号の読出制御信号（水平同期信号、垂直同期信号、転送信号等）等のクロック信号を生成し、CCD303に出力する。また、信号処理回路313は、CCD303から出力される画像信号（アナログ信号）に所定のアナログ信号処理を施すものである。信号処理回路313は、CDS（相関二重サンプリング）回路とAGC（オートゲインコントロール）回路とを有し、CDS回路により画像信号のノイズの低減を行ない、AGC回路でのゲイン調整をすることにより画像信号のレベル調整を行なう。

【0020】調光回路304は、フラッシュ撮影における内蔵フラッシュ5の発光量を全体制御部211により設定された所定の発光量に制御するものである。フラッシュ撮影においては、露出開始と同時に被写体からのフラッシュ光の反射光が調光センサ305により受光され、この受光量が所定の発光量に達すると、調光回路304からカメラ本体部2内に設けられたフラッシュ制御回路214（以下、FL制御回路という）への発光停止信号が出力される。FL制御回路214は、この発光停止信号にตอบสนองして内蔵フラッシュ5の発光を強制的に停止し、これにより内蔵フラッシュ5の発光量が所定の発光量に制御される。

【0021】カメラ本体部2内には、基準クロック、タイミングジェネレータ314、A/D変換器205に対するクロックを生成するタイミング制御回路202が設けられている。このタイミング制御回路202は、全体制御部211により制御される。また、A/D変換器205は、画像信号の各画素信号を10ビットのデジタル信号に変換するものである。A/D変換器205は、不図示のA/Dクロック発生回路から入力されるA/D変換用のクロックに基づいて各画素信号（アナログ信号）を10ビットのデジタル信号に変換する。

【0022】黒レベル補正回路206は、A/D変換された画素信号（以下、画素データという。）の黒レベルを基準の黒レベルに補正するものである。また、WB回路207は、γ補正（記録特性の逆線形性を逆補正して、記録濃度をより線形に近づけるための信号変換）後にホワイトバランスも合わせて調整されるように、R、G、Bの各色成分の画素データのレベル変換を行なうものである。WB回路207は、全体制御部211から入力されるレベル変換テーブルを用いてR、G、Bの各色成分の画素データのレベルを変換する。なお、レベル変換テーブルの各色成分の変換係数（特性の傾き）は全体



路 2 0 8 は、画素データの  $\gamma$  特性を補正するものである。 $\gamma$  補正回路 2 0 8 は、 $\gamma$  特性の異なる例えば 6 種類の  $\gamma$  補正テーブルを有し、撮影シーンや撮影条件に応じて所定の  $\gamma$  補正テーブルにより画素データの  $\gamma$  補正を行なう。

【0023】画像メモリ 2 0 9 は、 $\gamma$  補正回路 2 0 8 から出力される画素データを記憶するメモリである。画像メモリ 2 0 9 は、1 フレーム分の記憶容量を有している。すなわち、画像メモリ 2 0 9 は、CCD 3 0 3 が  $n$  行  $m$  列の画素を有している場合、 $n \times m$  画素分の画素データの記憶容量を有し、各画素データが対応する画素位置に記憶されるようになっている。VRAM (Video Random Access Memory) 2 1 0 は、LCD 表示部 1 0 に再生表示される画像データのバッファメモリである。VRAM 2 1 0 は、LCD 表示部 1 0 の画素数に対応した画像データの記憶容量を有している。

【0024】撮影待機状態においては、撮像部 3 により 1/30 (秒) 毎に撮像された画像の各画素データが A/D 変換器 2 0 5、黒レベル補正回路 2 0 6、WB 回路 2 0 7 及び  $\gamma$  補正回路 2 0 8 により所定の信号処理を施された後、画像メモリ 2 0 9 に記憶されるとともに、全体制御部 2 1 1 を介して VRAM 2 1 0 に転送され、LCD 表示部 1 0 に表示される。これにより、撮影者は LCD 表示部 1 0 に表示された画像により被写体像を確認することができる。また、再生モードにおいては、メモリカード 8 から読み出された画像が全体制御部 2 1 1 で所定の信号処理を施された後、VRAM 2 1 0 に転送され、LCD 表示部 1 0 に再生表示される。

【0025】カード I/F 2 1 2 は、メモリカード 8 への画像データの書き込み及び画像データの読出しを行なうためのインタフェースである。また、通信用 I/F 2 1 3 は、パーソナルコンピュータ 1 9 を通信可能に外部接続するための、例えば赤外線インタフェース (IrDA) に準拠したインタフェースである。このパーソナルコンピュータ 1 9 は、デジタルカメラ 1 からの画像データを受信装置に伝送する際に、転送用サーバとして用いられる。

【0026】モデム 4 0 1 は、転送用付加データを付加した画像データを電話回線を介してデータ転送ができるように変調を施すものである。本実施形態では、デジタルカメラ 1 の画像データを転送用サーバ 1 9 を介して受信装置に転送するが、モデム 4 0 1 を用いてデジタルカメラ 1 から受信装置に直接画像データを転送することも可能である。

【0027】FL 制御回路 2 1 4 は、内蔵フラッシュ 5 の発光を制御する回路である。FL 制御回路 2 1 4 は、全体制御部 2 1 1 の制御信号に基づき内蔵フラッシュ 5 の発光の有無、発光量及び発光タイミング等を制御し、調光回路 3 0 4 から入力される発光停止信号に基づき内

9 は、撮影日時を管理するための時計回路であり、不図示の別の電池で駆動される。また、操作部 2 5 0 は、上述した UP スイッチ 6、DOWN スイッチ 7、シャッターボタン 9、FL モード設定キー 1 1、圧縮率設定スイッチ 1 2、モード設定スイッチ 1 4、戻りスイッチ E S C、及び表示切り替えスイッチ D I S P に相当するスイッチである。

【0028】全体制御部 2 1 1 は、マイクロコンピュータからなり、上述した撮像部 3 内及びカメラ本体部 2 内の各部材の駆動を有機的に制御してデジタルカメラ 1 の撮影動作を統括制御する。

【0029】上記全体制御部 2 1 1 は、撮影モードにおいて、シャッターボタン 9 により撮影が指示されると、図 5 に示されるように、撮影指示後に画像メモリ 2 0 9 に取り込まれた画像のサムネイル画像 (縮小画像表示用の低解像度画像) と、圧縮率設定スイッチ 1 2 で設定された圧縮率  $K$  により J P E G (Joint Photographic Experts Group) 方式により圧縮された圧縮画像とを生成し、撮影画像に関するタグ情報 (コマ番号、露出値、シャッタースピード、圧縮率  $K$ 、撮影日、撮影時のフラッシュのオンオフのデータ、シーン情報、画像の判定結果等の情報) とともに両画像をメモリカード 8 に記憶する。メモリカード 8 には、圧縮率 1/20 で 40 コマの画像が記憶可能であり、各コマにはタグ情報、J P E G 形式で圧縮された高解像度の画像データ (640×480 画素)、及びサムネイル表示用の画像データ (80×60 画素) が記録されている。各コマ単位で、たとえば E X I F 形式 (J P E G に準拠したファイルフォーマットの一つ) の画像ファイルとして扱うことが可能である。タグには、撮影日、撮影時のフラッシュのオンオフのデータ等が格納されている。また、撮影者名、暗証番号、認証用データもこのタグ内に記録されている。

【0030】次に、本発明の特徴であるデジタルカメラ撮影後の画像データの転送手順と、画像データ転送時の暗証番号及び認証データの設定方法について説明する。このデジタルカメラ 1 は、パーソナルコンピュータの G U I (Graphical User Interface) と同様な操作性を持たせてある。ユーティリティの設定等で、ユーザによる選択が必要な事象がある場合、LCD 表示部 1 0 上にメッセージボックス (ダイアログ) の表示を行なう。シャッターボタン 9 の押下は、肯定を意味する操作として定義され、UP スイッチ 6 及び DOWN スイッチ 7 の押下は、選択枝の順次選択の操作として定義される。また、戻りスイッチ E S C の押下は、現在の設定モードからの上位層への移行 (戻り)、操作の撤回、キャンセルの動作として定義される。

【0031】本実施形態では、デジタルカメラ 1 のメモリカード 8 内の画像データは、転送用サーバ 1 9 を介して受信装置 5 0 0 へ送信される。画像データを転送する

モードを画像データ転送モードに切り替える。画像データ転送モードに入ると、図 6 ( a ) のような表示が LCD 表示部 1 0 上に表示され、メモリカード 8 内の先頭画像が画像選択ウインドウ 1 0 1 に表示される。ここでは UP スイッチ 6、DOWN スイッチ 7 を押すことにより、画像選択ウインドウ 1 0 1 と「次へ」ボタン 1 0 2 との項目間を選択設定アイテム（十字マーク、反転表示等のどの項目が選択されているかを示す表示）が移動する。ここで画像選択ウインドウ 1 0 1 選択時（選択設定アイテムが画像選択ウインドウ 1 0 1 上に位置している時）にシャッタボタン 9 を押すと、画像選択ウインドウ 1 0 1 が選択される。次に、画像選択を指示するダイアログ 1 0 3 の指示に従って、UP スイッチ 6、DOWN スイッチ 7 を操作すると、画像ウインドウ 1 0 1 内の画像が、メモリカード 8 内の前又は次の画像に更新される。画像ウインドウ 1 0 1 内に転送したい画像が表示されている状態でシャッタボタン 9 を押すと、その時点で表示されている画像が転送用画像として決定し、選択設定アイテムが「次へ」ボタン 1 0 2 へ移動する。ここでシャッタボタン 9 を押すと、「次へ」ボタン 1 0 2 を操作した状態になり、図 6 ( b ) のような暗証番号入力用の画面が表示される。

【 0 0 3 2 】次に、図 6 ( b ) に示される英字 5 文字の入力枠 1 0 4 内に以下の方法で暗証番号を入力する。UP スイッチ 6 を押すごとに候補ローマ字が、a → b → c → ……と変化するので、希望の文字が現れたところでシャッタボタン 9 を押すことにより、文字を決定する。文字が決定すると入力枠 1 0 4 内のカーソル位置が一文字分右にシフトするので、次の文字の入力を行う。このようにして、全ての文字を入力すると、図 6 ( c ) のように「次へ」ボタン 1 0 2 が表示される。ここで、シャッタボタン 9 を押すと図 6 ( d ) のような画面が表示されて、画面上に認証用データの撮影を指示するダイアログ 1 0 5 が表示されるので、これに従い、送信者を特定するために、送信者自身の顔を撮影する。本デジタルカメラ 1 は通常撮影時、メモリカード 8 上に画像を記憶するが、認証用画像データとして撮影した画像は転送時の一時的なデータであるため、画像用バッファの中に保持される。また、この認証用画像データは、送信者が特定できる程度の画像解像度でよく、通常の撮影データよりも低解像度で、圧縮比も高く設定される。送信者の顔を撮影すると、認証データの設定が終了し、カメラ内の画像メモリ 2 0 9 に撮影画像データが保持され、LCD 表示部 1 0 上の画面は、図 6 ( e ) のような画面になる。

【 0 0 3 3 】次に、シャッタボタン 9 を押すと、「次へ」ボタン 1 0 2 を操作した状態になり、図 6 ( f ) のような画面となり、画面上に認証用画像 1 0 6 が表示される。これにて、画像データ転送用に必要なデータ類はすべてそろったので、データ送信が可能となる。ここで

た状態になり、データ転送が開始され、その進度が図 6 ( g ) のように表示される。そして、全データ送信を終了すると、図 6 ( h ) のような画面表示になる。このような動作を経て、画像データが転送用サーバ 1 9 に転送される。

【 0 0 3 4 】次に、受信装置側の構成及び動作について図 7 及び図 8 を参照して説明する。受信装置 5 0 0 は、電話回線 5 0 1 と接続して送受信データの変復調を行うモデム 5 0 2、装置全体の制御を行う CPU 5 0 3、専用のデータ受信ソフトを格納する ROM 5 0 4、表示装置（モニタ）5 0 5、受信した画像を保存する画像メモリ 5 0 6、及びマウスとキーボードよりなる操作部 5 0 7 から構成される。この受信装置 5 0 0 は、電話回線 5 0 1 を介して転送用サーバ 1 9 に格納されたデジタルカメラ 1 の画像データを受信することができる。

【 0 0 3 5 】ROM 5 0 4 に格納されたデータ受信ソフトを起動すると、定期的に、あるいは使用者の指示に応じて、受信装置 5 0 0 から転送用サーバ 1 9 にモデム 5 0 2 を通じてダイヤルアップ動作が行われる。ここで転送用サーバ 1 9 に新たな画像データが転送されていると、転送用サーバ 1 9 から受信装置 5 0 0 へ画像ファイルのヘッダ部分（撮影者名、暗証番号、認証用データを含む）が送られて、受信装置 5 0 0 のモニタ 5 0 5 上に図 8 ( a ) のような画面が表示される。ここで受信者は、認証用画像 5 1 3 を見て、送信者の確認を行なう。受信者が、送信者を確認できない、あるいは見知らぬ送信者で画像データを受信したくない場合には、受信中止ボタン 5 1 1 をマウスでクリックして、画像データの受信を中止する。このような手順を踏むことにより、受信者が無関係な画像を受信したり、人を中傷する不快な画像を受信することを防ぐことができる。また、画像データを受信したい場合には、暗証番号入力枠 5 1 2 内に暗証番号を入力する。暗証番号が画像ファイルのヘッダ内に記録されたものと同一である場合には、図 8 ( b ) に示されるように画面上に受信ボタン 5 1 4 が表示される。このボタン 5 1 4 をクリックすると、画像データの転送が始まり、図 8 ( c ) のようにその進行度を示すバー 5 1 5 が表示される。画像が転送されると、図 8 ( d ) のように画面全体に転送画像 5 1 6 が表示される。

【 0 0 3 6 】本発明は、上記の実施形態に限られるものではなく、様々な変形が可能である。例えば、上述の実施形態では、受信装置は、受信者が暗証番号を入力してから画像データの受信を開始したが、あらかじめ画像データを受信しておき、暗証番号を正しく入力した場合のみ、受信した画像データの表示を行うようにしてもよい。またこの時、画像データの副走査方向の各ライン毎のスクランブル化を暗証番号の数値に基づき数学的規則に従って行い、暗証番号を正しく入力することにより、

施形態では、デジタルカメラの画像データを、転送用サーバを介して受信装置に送信したが、デジタルカメラから直接受信装置に送信してもよい。これにより、伝送システムの構成を簡単にすることができる。

【 0 0 3 7 】

【発明の効果】 以上のように請求項 1 の発明によれば、デジタルカメラからの画像データ送信時に、送信する画像データに暗証番号又はそれに相当する情報を付加するようにしたので、デジタルカメラから送信された画像を受信側で特定者だけが閲覧することができる。これにより、送信された画像が受信側で不特定の人間に閲覧されてしまうことを防ぐことができる。

【 0 0 3 8 】 また、請求項 2 の発明によれば、画像データ受信装置側で入力された認証情報とデジタルカメラ側から送信された認証情報とが一致したときに、画像データの受信が可能となるので、認証情報を特定者にだけ知らせておくことにより、受信側で特定者だけがデジタルカメラから送信された画像を閲覧することができる。これにより、送信された画像が受信側で不特定の人に閲覧されてしまうことを防ぐことができる。

【 0 0 3 9 】 また、請求項 3 の発明によれば、画像データ送信時にデジタルカメラ側にて付加された認証データが、画像データ受信装置での受信時に、その画像データの受信前に表示手段に表示されるので、その認証データに基づき送信元の身元確認を行った上で、指示手段を操作して画像データの受信許可を指示することができる。これにより、受信者が自分に無関係な画像等の不要な画像データの受信を防ぐことができる。

【 0 0 4 0 】 また、認証データ付加手段により付加する認証データとして、送信者の顔の画像データを用いるこ

とにより、受信者が表示手段に表示された認証データを容易に判別することができ、上記請求項 3 に記載の効果的を得ることができる。

【図面の簡単な説明】

【図 1】 本発明の一実施形態によるデジタルカメラの正面図である。

【図 2】 デジタルカメラの背面図である。

【図 3】 デジタルカメラの底面図である。

【図 4】 デジタルカメラの電氣的構成を示すブロック図である。

【図 5】 メモリカード内のデータ配列を示す図である。

【図 6】 デジタルカメラで撮影した画像データの転送手順の説明図である。

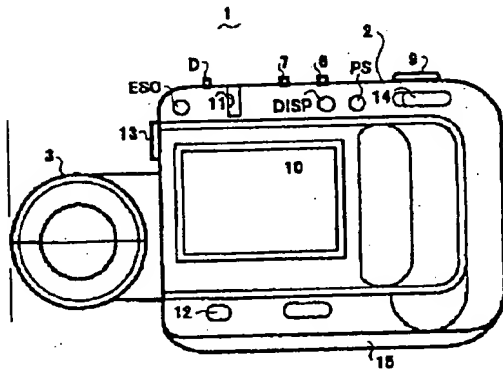
【図 7】 受信装置の電氣的構成を示すブロック図である。

【図 8】 受信装置側における画像データ受信動作の説明図である。

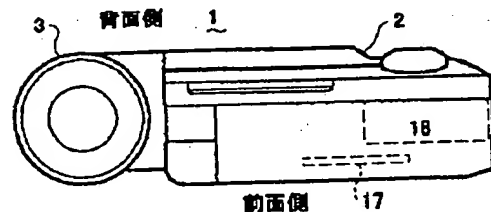
【符号の説明】

- |       |                            |
|-------|----------------------------|
| 1     | デジタルカメラ                    |
| 6     | UP スイッチ (認証情報付加手段)         |
| 9     | シャッターボタン (認証情報付加手段)        |
| 10 4  | 入力枠 (認証情報付加手段)             |
| 2 1 1 | 全体制御部 (認証情報付加手段、認証データ付加手段) |
| 3 0 3 | CCD (認証データ付加手段)            |
| 5 0 0 | 受信装置 (画像データ受信装置)           |
| 5 0 4 | 暗証番号入力枠 (認証情報入力手段)         |
| 5 0 5 | モニタ (表示手段)                 |
| 5 0 7 | 操作部 (指示手段、認証情報入力手段)        |

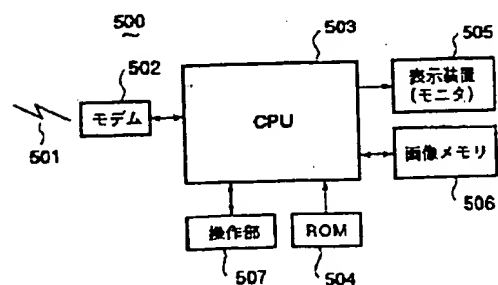
【図 2】



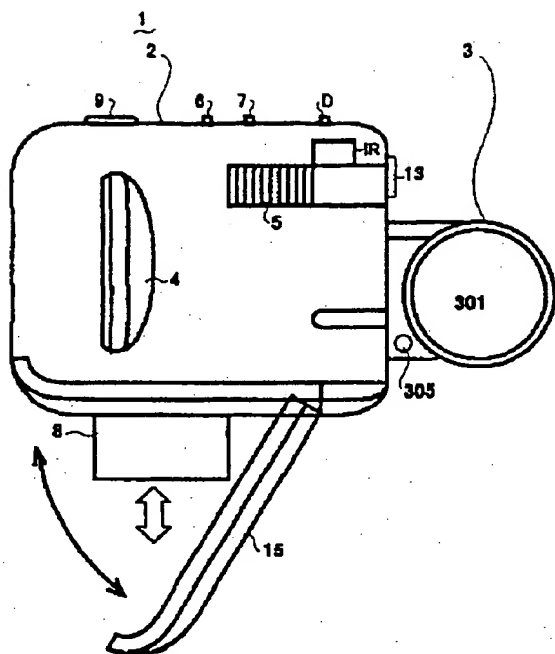
【図 3】



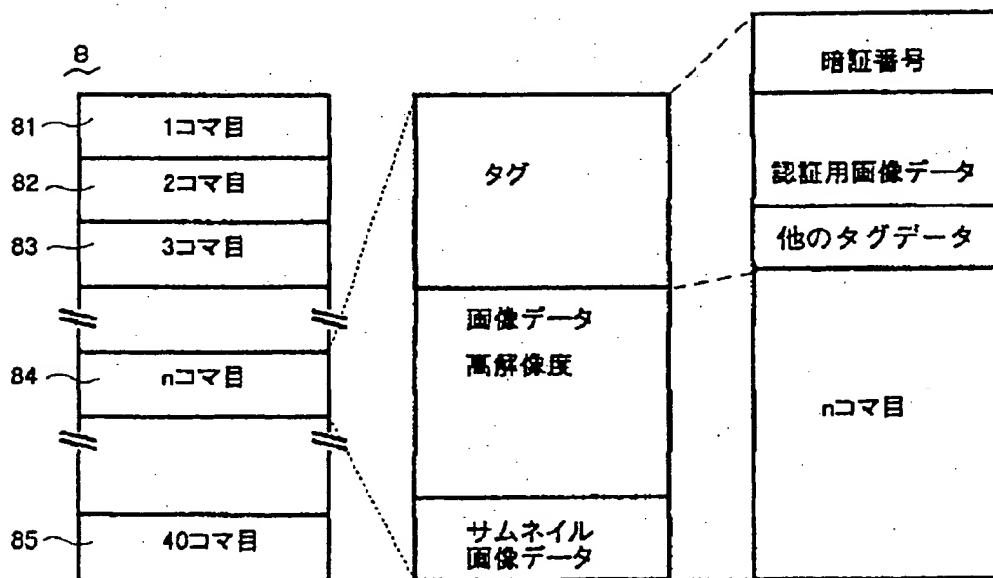
【図 7】



【図 1】



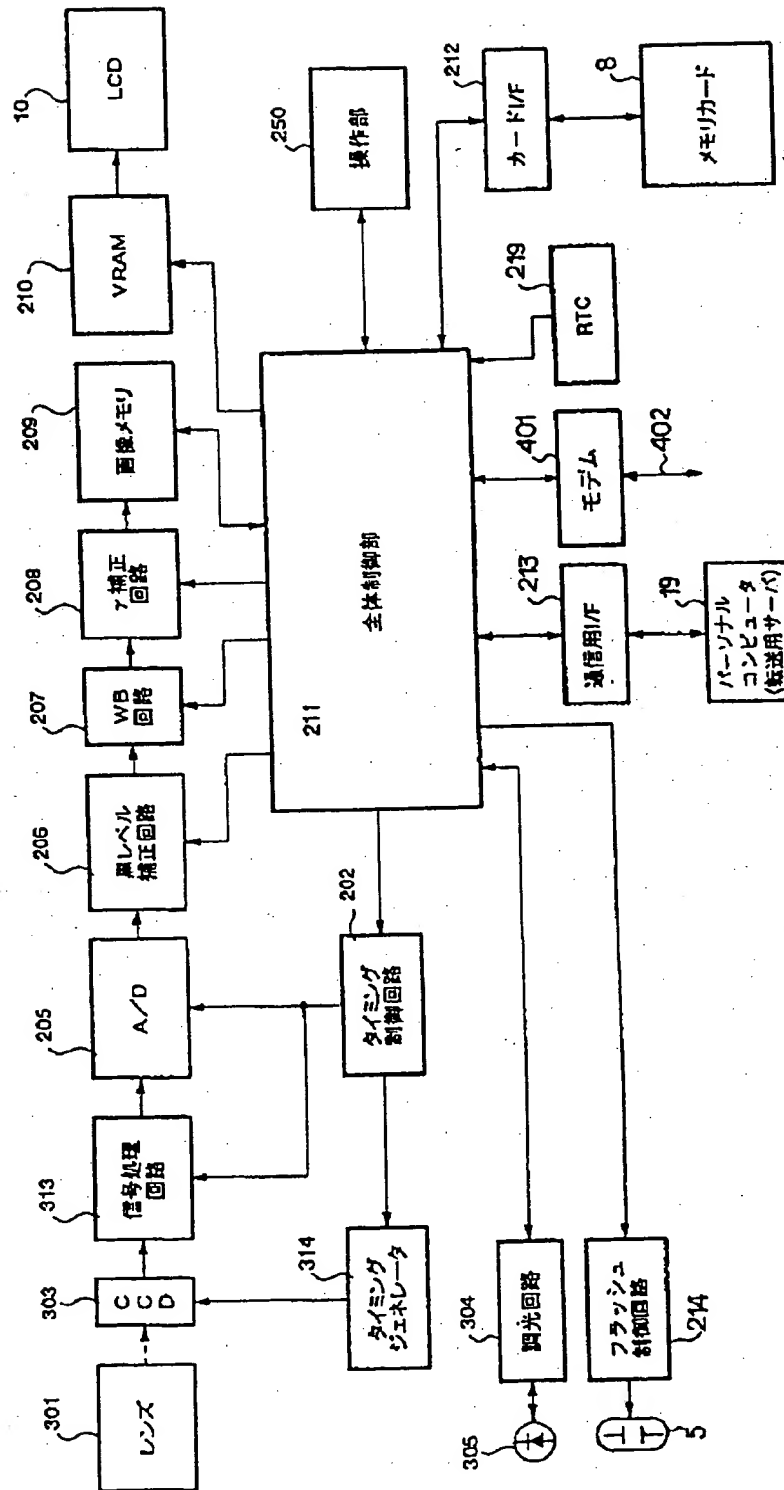
【図 5】



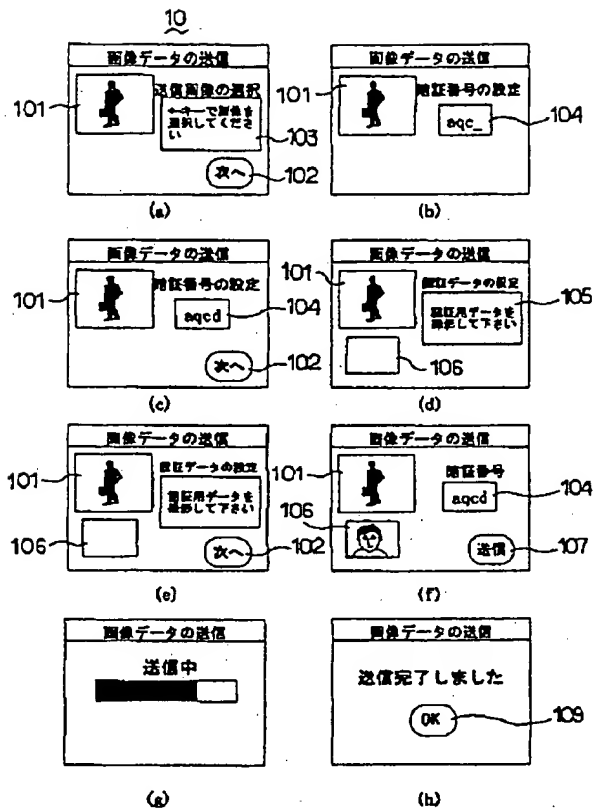
メモ리카ード内のメモリマップ

画像データ転送時の  
メモリマップ

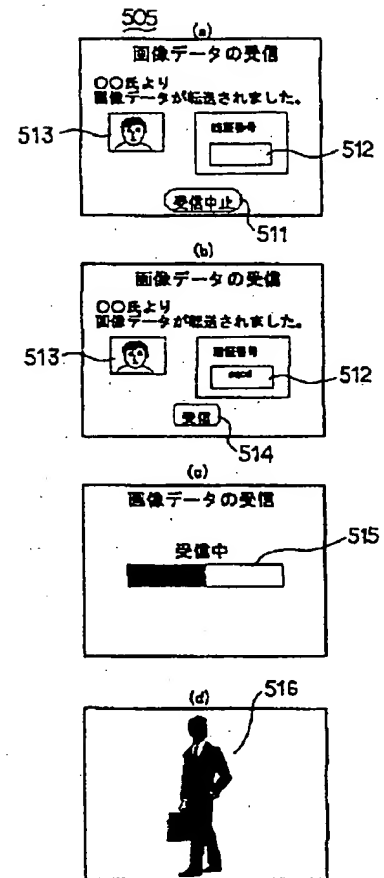
【 図 4 】



【 図 6 】



【 図 8 】



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